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INDIAN CIVIL VETERINARY DEPARTMENT; PRINCIPAL, PUNJAB VETERINARY COLLEGE.

MAJOR PEASE was born in 1862, at Rusholme Hall, Selby, Yorkshire, which has been the residence of the family since the reign of Charles I. He was educated at St. Edmund's College, Old Hall Green, Herts, and graduated from the London Veterinary College in 1882, entering the Army Veterinary Department in 1884, going to India in 1885. After three years' service in the Army he was offered a staff appointment, becoming Assistant Superintendent in the Horse-Breeding Department, and in 1888 Veterinary Adviser to the Punjab Government and Professor in the Lahore Veterinary College. In 1900 Major Pease was appointed Superintendent of the Imperial Bacteriological Survey and Lecturer in the College of Science at Poona, and in 1892 he became Assistant Inspector-General in charge of the cattle and disease branches of the department; eventually succeeding Colonel Nunn, the present Principal Veterinary Officer in India, as principal of the Punjab Veterinary College, in 1896.

Major Pease has devoted practically all his service to civil veterinary work in India, and has done more to forward the interests of veterinary science in that country than any one. He has been a consistently earnest and indefatigable worker in the field of tropical veterinary science, a successful teacher, and a voluminous writer. Major Pease is a brilliant linguist, and has an exceptional knowledge of the vernacular, and his acquaintance with the native character has enabled him to raise the standard of the Lahore College to a high level. Much of his literary work is known only to the vernacular speaking veterinarians, being printed in Urdu, in which language he has published text-books on veterinary medicine and surgery, soundness and age, meat inspection, handling of animals, and other subjects. He has also maintained a monthly veterinary journal in Urdu for thirteen years. As Superintendent of the Imperial Bacteriological Survey he travelled extensively in India and Burma, and acquired a considerable knowledge of local conditions and disease. He was mainly instrumental in founding and developing the present Imperial Bacteriological Laboratory at Muktesar, the site for which he selected, and the

Government of India benefited greatly by his advice in matters connected with the Institution. He has written numerous handbooks on contagious disease, differentiating hæmorrhagic septicæmia in India in 1894. As Assistant Inspector-General he made extensive tours in the Punjab districts in connection with cattle breeding and disease, and his detailed reports on these subjects formed the basis from which the present system is being elaborated. He was editor of the veterinary series of the agricultural ledger of the Indian Government, and produced quite a number of papers dealing with breeds of cattle and contagious diseases. He also wrote a horse-breeding manual, for the use of breeders, in Urdu.

As Principal of the Punjab Veterinary College he has proved a worthy successor to Colonel Nunn, and has been most successful in developing that institution in an extraordinary way. The number of students has been raised to 250, and the accommodation and equipment now provided is such as to enable it to compare favourably with veterinary colleges in any part of the world. It was in this College laboratory and segregation ward that dourine was first discovered in India amongst the stallions of the horse-breeding department, and on his advice measures were devised for the prevention of the disease, which have resulted in its being stamped out in the breeding districts. He also studied camel surra, proving to the military department what a serious mortality it caused in the transport, and impressing on them the necessity for appointing a specially qualified veterinarian to study camel diseases. He has done a good deal of research work, chiefly in connection with tropical diseases, and last year in conjunction with Captain Baldrey and Mr. Montgomery, of the Indian Civil Veterinary Department, brought out the *Journal of Tropical Veterinary Science*, which marked an era in the progress of that science.

Major Pease is a keen volunteer, being a Major and second in command of the Punjab Light Horse; also a notable Freemason, being a P.M., P.P.Z., P.M.M., P.C.N., P.E.P., and P.M.W.S.; is a Past President of the Board of General Purposes of the D.G. Lodge of the Punjab, a Past District Grand Warden of the Mark, a Past District Sojourner in the Chapter, and a Past Provincial Standard Bearer in the Bengal Priory. He is also a member of several learned societies, being F.L.S., F.R.M.S., a Member of the Society of Arts, and of the Royal Institute of Public Health. The Société Centrale de Med. Vet. of France has recently recognised his work by electing him a corresponding member of the Society. He has on several occasions received the thanks of the Governor-General of India in Council, and of the various local governments, and has officiated no less than five times as Inspector-General of the Civil Veterinary Department. There is no better example of the parsimony of the Indian Government in regard to rewards and decorations to members of the veterinary profession than in the case of Major Pease, who has received no more than bare pay and empty thanks for twenty-two years of exceptional service. Had he remained in the Army he would to-day have been better off, had higher rank, and, doubtless, a decoration or two.

Editorials.

THE FUTURE PROSPECTS OF THE PROFESSION.

To those who have become pessimistic about the future outlook of the veterinary profession, we would recommend a careful perusal of the introductory addresses delivered at the opening meetings of the winter sessions at each of the veterinary schools. One and all are unanimous in the decision that there never was a time when the prospects of the profession seemed so bright. Notwithstanding the advent of the motor car, a method of locomotion which has undoubtedly come to stay (although we doubt very much its power to entirely supplant the horse), the future outlook of the veterinary surgeon has been publicly stated in several quarters to be better now than ever it has been in the past, and with this view we are entirely in accord. The position of officers in the Army Veterinary Corps was never better; there were never at any time in the past so many veterinary officials on the staff of the Board of Agriculture; Municipal and County authorities are gradually awakening to the value of the services which can be rendered by efficiently trained members of our profession; and the colonies offer positions, with opportunities for work in research and preventive medicine, at salaries which, if not princely, can hardly be said to be meagre. Even the private practitioner has done less grumbling of late than usual, and if the motor bogey operates much longer upon the minds of parents to cause them to restrain the ardour of their sporting sons and turn their energies into channels other than veterinary, those who have already become established in general practice will have little to fear in the way of close competition.

It is for the schools that the greatest fear is to be felt; depending as they do principally upon the numbers of student entries, they are undoubtedly, at the present time, passing through a serious crisis, and the sooner the State can be induced to officially recognise the value of the veterinary profession and the necessity for maintaining an efficient supply of properly trained men, the better for them—and, we also venture to add, without self conceit to ourselves as a profession—the better for the State.

THE LIABILITIES OF THE MASTER FARRIER.

A CASE which we have considered of sufficient importance to report in detail in a further column of this month's JOURNAL, illustrates well one of the annoyances to which a master farrier may be put and the necessity for the exercise of a proper care and precaution on the part of himself and his men when dealing with an unsound foot. The case was also an illustration of the value accruing to a man of small means from the membership of a powerful Association, for the plaintiff in the case was backed up by the Metropolitan Veterinary Surgeons' and Master Farriers' Association, and it was really undertaken as a test case. It would probably have been carried to a higher court had the decision been an adverse one.

The main points at issue were that a certain horse was well known to possess very unsound feet; the animal usually wore its shoes out within ten days, had ring-bones, side-bones, dropped sole, brittle, shelly walls, and altogether very bad feet for shoeing. It had been "pricked" previously, and, on that occasion, the master farrier paid for the hire of another horse and sundry expenses whilst the animal was recovering. In the witness-box he stated that he had told the owner of the animal that the horse was a risky one to shoe, and that he preferred not to shoe it. Lameness subsequently occurred, pus was found in the foot along the course of a nail, a bad quittor ensued, and the horse was compelled to stand in the stable for a prolonged period. The expenses incurred by this the owner wished the farrier to pay for, and refused to pay his shoeing account until this was settled. The master farrier objected to pay, and sued for his account.

The learned judge held that, in cases of this kind, it was incumbent upon the owner of the injured horse to prove to the satisfaction of the Court that there had been negligence in the method of applying the shoe. There was overwhelming evidence in this instance to show that the greatest possible care had been taken, and, moreover, that the farrier had taken the precaution to advise the owner of the bad condition of the horse's foot. The one weak point in the evidence given seemed to be in regard to this latter, as it had not been done in writing, and the owner of the horse denied having received such notice. To all veterinary surgeons who keep forges and thus, of necessity, assume the responsibilities of the work done by their men, the case is worthy of careful consideration.

AN ANNUAL REGISTRATION FEE.

THE proposal for the annual payment of a fee by all members of the veterinary profession is one of the most important topics in our politics at the present moment, and although we fully concur in the principle that the funds of the college should be augmented, we are doubtful if the proposed scheme is yet practicable. At all events, there are certain points which should receive the attention of the promoters.

In the first place the idea seems to have started with the taking out of an annual certificate, as is the practice by solicitors. Any one who likes may practice either human or veterinary medicine, always provided he does not hold himself out as a duly qualified medical man or a M.R.C.V.S. It is a criminal offence for an unqualified person to pretend to be a solicitor, or to practise as a solicitor, or even for a duly qualified solicitor to practise without taking out his annual certificate. The fact seems to have been overlooked that solicitors are fully protected from outside competition; the medical and veterinary professions are not. Ideas have been brought forward for obtaining an Act of Parliament to make it criminal for an unqualified person, *i.e.*, a person not a M.R.C.V.S., to treat an animal. In most European countries medical men have from time immemorial endeavoured to obtain such a monopoly and failed. In England the commencement of this agitation was in the time of Henry VIII., the king who gave the first charter to the barber surgeons. If public opinion still thinks that the individual is at liberty to get any one he likes to treat him in sickness, is it reasonable to suppose that Parliament will grant a monopoly to the M.R.C.V.S. when such is denied to the M.D.? It is to be hoped that any such project will be nipped in the bud, as any bill of this nature presented to Parliament will have no other fate than to be summarily rejected. The solicitor who neglects to take out his annual certificate of practice and pay the fee is not only debarred from practice, but makes himself amenable to the law if he continues. The M.R.C.V.S. who neglected to pay the fee would be at liberty to continue practice, and could not be interfered with.

In case of a M.R.C.V.S. not paying the fee, we presume the penalty would be the removal of his name from the register. In that event would he still be entitled to use the title M.R.C.V.S., and in case he did, could a conviction be obtained? We greatly doubt if any court would convict, and he could advertise freely. Removal from the register is the penalty for gross misconduct;

is it proposed that the same penalty be applied to the busy practitioner who has neglected to pay this fee?

It is a fundamental principle in law that a corporation cannot alter its constitution without the *unanimous* consent of its members. How is it proposed to enforce the payment of the fee on existing M.R.C.V.S. without an Act of Parliament? If there was any opposition this act would be thrown out to a certainty.

We have searched through the various charters and can find no provision enabling the Council to pass bye-laws of a retrospective or financial nature, and, if passed, such could be successfully resisted, as being an infringement of the agreement under which the plantiff registered his name on the Register of the college.

Indeed, there is a leading case on the point in connection with a certain London club, whose name, from obvious reasons, we do not mention. At a general meeting of the members of the club it was resolved to raise the annual subscription from eight to ten guineas, a small minority objecting. Certain of the minority refused to pay the increased subscription, and were expelled from the club. They went to the Court of Chancery for a *mandamus* to compel the club committee to restore them to membership, and were successful, the court holding that the subscription of eight guineas being one of the fundamental articles of association when the dissenting members joined, this article could only be altered by the *unanimous* consent of all the members of the club. We have taken counsel's opinion, which is that this case would apply to the R.C.V.S., and that if any *present* member was removed from the register for not paying the fee, he could successfully sue the Council of the R.C.V.S. in the Court of Chancery, and obtain a *mandamus* compelling them to restore him. No doubt an Act could be obtained at some cost and trouble, imposing a fee on all future M.R.C.V.S., but not, we are advised, on present ones, unless they were absolutely unanimous.

We think these points should be considered and means devised to overcome them before any money is spent.

EDUCATION AND EXAMINATIONS.

BY "OBSERVER."

EVERY profession is said to have its drawbacks, and judging from the amount of discussion which has recently taken place in the columns of this Journal, it is evident the veterinary profession is likely to occupy a prominent position in ventilating a grievance, real or imaginary.

The subject of veterinary education and examinations is of too far-reaching importance to be lightly considered, or to be discussed without advancing some powerful reason for promoting a change in a system of examination which has been in vogue for a long period.

The examiners of the R.C.V.S., working on their present system, have always appeared to perform their onerous, and what must be termed delicate, duties in a painstaking, unbiassed fashion; and it appears strange that quite suddenly a howl of disapproval of methods should break forth, simply because we do not ape and copy the system of examination adopted by the medical profession. It is all very well to speak of progression, and for certain sections of the veterinary profession to call out that we are behind the times—but will any real benefit accrue from a change in the lines which have been worked upon for so long a period without arousing this sudden outcry.

In my opinion the existence of our one portal system at once establishes a very firm and unyielding factor in favour of a maintenance of our present system. All our examiners are carefully selected, being gentlemen of acknowledged professional skill and of broad-minded principles; gentlemen who are likely to give every consideration to a candidate, and not to pass or reject him until they have had a fair insight into his knowledge.

The one portal system furnishes an equal chance to all students, and when the examiners look for and expect a sound knowledge of the professional subjects, I fail to see how the inclusion of a teacher as an examiner is likely to promote any beneficial change to the profession.

The diploma-granting bodies of the medical profession are so numerous that the public is now beginning to base its estimation of a practitioner's skill on the reputation of the particular university or school from which he graduated, and in this way newly-fledged members are placed on a sliding scale of professional attainments. Could anything be more unjust or misleading than such a procedure? Any system which precludes the possibility of such an occurrence must be an ideal one.

We are progressing slowly and solidly; and if the suggested alteration in our well-conceived system of examination be adopted, it will be the first step towards the creation of an undesirable form of rivalry. Every newly-qualified veterinary surgeon as he leaves his Alma Mater is placed on the same platform irrespective of the school from which he graduated, and it then depends altogether upon himself whether he moves forward or adopts a retrograde course.

I am therefore forced to the conclusion that until some scheme is brought forward, backed by weighty and convincing evidence of some unfairness or weakness in the present system, we should be content to leave "well enough" alone, and not seek another method simply because the medical profession has favoured it.

THE OPENING ADDRESS OF THE ROYAL VETERINARY COLLEGE, LONDON.

BY PROFESSOR WOODRUFF, M.R.C.V.S.

THE opening meeting of the winter session was held at the Royal Veterinary College, Camden Town, on Tuesday, October 2. The Right Hon. Earl Carrington, G.C.M.G., President of the Board of Agriculture, occupied the chair, and was supported on the platform by Major-General Thomson, C.B. (Director General Army Veterinary Service), Sir Thomas Elliott (Permanent Secretary of the Board of Agriculture), Colonel Duck, C.B. (late Director-General Army Veterinary Department), and Sir John McFadyean, Principal of the College. Professor Woodruff gave the following address:—

My first duty to-day must be to offer a word of welcome to those new students who find themselves within these walls for the first time; to many more who are returning to our midst for another year's work; to our numerous visitors who in most cases are refreshing old memories of student days, and whose continued interest in the welfare and progress of the Royal Veterinary College we rejoice to see; and not least to you, sir, both in your private capacity as one greatly interested in agriculture as landowner and farmer, and also in your official position as President of the Board of Agriculture and Fisheries and representative of His Majesty's Government.

We are here to-day in a position unique in the history of this institution, in that we are receiving for the first time a government subsidy of £800 per annum, and small though the amount be, in the general revival of a spirit of economy in high places I can well imagine that some may be found to ask the question—what is the justification for this grant of public money, and especially at the present moment, when mechanical traction is rapidly displacing the horse on every hand? There have been, and are, candid friends who tell us not indeed to beat our scalpels into plough-shares, but at any rate that we shall have to convert the Royal Veterinary College into an engineering academy. Now, sir, should this suspicion have arisen in the mind of any present, that we are, so to speak, flogging a dead or dying horse, let me say rather do we claim for the Profession and for this Institution, that never were our best men turned out so well equipped, and never were they more needed in the public service than at the present time. Let it be my endeavour to show in some measure how we are able to make good this claim; and first as to the need for our special knowledge and training in the interests of the community.

Quite recently, within the memory of everyone, the need for efficient inspection of meat and meat products has been brought home to us, and the man-in-the-street has been deeply impressed by the horrible scandals and the loathsome disclosures of the meat-packing industry in Chicago.

It is happily not necessary for me even to suggest that similar practices obtain here in England, rather it is matter of congratulation that we are not dominated to any great extent by a meat trust, but what is very remarkable is that this same man-in-the-street who holds up his hands in pious horror with respect to Chicago, appears utterly unconscious, or at any rate quite unmindful, of the fact that in this country, except in a few enlightened cities and towns, there is no regular

system of meat inspection at all. To anyone acquainted with the well organised systems of inspection in Germany and Belgium, and the widespread, if less perfect, measures in France, Italy, Austria, and Spain, it is a standing reproach to our public health administration that statements such as the following, which is only too true, should be possible in foreign text-books. "Other countries—as for instance, England, which is otherwise so well organised with regard to public sanitation, and which is called the cradle of hygiene—are entirely without a regulated meat inspection." (Ostertag's "Handbook of Meat Inspection.") We veterinary surgeons know better than anyone else what this means, how that carcases of animals affected with tuberculosis, anthrax, pyæmia, with trichinæ and cysticerci, with malignant tumours or febrile diseases, or those of immature or unborn calves, or of animals hurriedly killed to prevent them dying of disease; how that all these, which would be condemned if submitted to an efficient inspection, are dressed and exposed for sale with impunity.

It would be interesting to consider the proportion of meat inspected to that sold without any inspection. The towns in England and Wales with public abattoirs are very few, whilst those in which even a partial attempt is made to inspect meat form only a very small proportion of the whole. Then, too, in the best of these, there are many private slaughter-houses, and hundreds of carcases are sold free of all supervision. For the rest of the towns and cities and in the country generally the only provisions for meat inspection are those contained in the Public Health Acts 1875 and 1890, and the Towns Improvement Clauses Act, Section 131, by which any medical officer of health, or inspector of nuisances, or, in urban districts, other duly appointed persons, may at all reasonable times inspect and examine any animal, carcase, or article intended for the food of man. With respect to the medical officer of health as meat inspector, I have only two remarks to make: first, that he is far too busy a man to spend much time in this work; and second, that he is the first person to admit his inability to properly inspect live animals, or to recognise many of the diseases with which animals may be affected.

As for the nuisance inspector or, in urban districts, other duly appointed person—it is only necessary to quote from the report of the Royal Commission on Tuberculosis of 1898. The Commissioners say, "There is a total absence of uniformity in the special qualifications required of the persons employed as meat inspectors by the sanitary authorities in different places, as may be seen by a return presented to the House of Commons in 1896 showing the previous vocations of those acting in that capacity. In Battersea for instance, four plumbers and three carpenters discharge the office of meat inspector. In Hackney the duties have been committed to two plumbers, one carpenter, one compositor, one bricklayer, one florist, one builder, one surveyor, and one stonemason. In Portsmouth a solitary butcher has received as colleagues three school teachers, one medical dispenser, one carpenter, and one tram conductor." The report continues, "On this question we are satisfied that some pathological training is the proper basis upon which to build the knowledge required by a meat inspector, and that wherever practicable veterinary surgeons thus educated should be employed as meat inspectors. In large towns where a staff of inspectors is maintained, we do not think it necessary that all these should

be veterinary surgeons, but all meat inspectors should pass an examination and receive a qualifying certificate from a central authority before appointment."

And this opinion, sir, that the veterinary surgeon is the only person qualified to inspect live animals, to decide on doubtful cases, and to supervise meat inspection generally, is held not only by the veterinary profession, but by medical officers, by the butchers and meat traders, by all continental administrations and even by our own legislature, for in the Public Health (Scotland) Act of 1897 it is specially laid down that a *veterinary surgeon* may be appointed as meat inspector, and further, that in any proceeding with regard to a living animal the medical officer or sanitary inspector must be accompanied by a veterinary surgeon.

As to the degree of danger to the public health from diseased meat, from tuberculosis, from animal parasites, from anthrax, and many other conditions, much might be said if time allowed, but whether the danger be great or small, the public, whenever they are made to realise these things, speak with no uncertain sound, as the Chicago firms are learning, and they have a right to demand sound wholesome meat when a fair price is paid.

Fortunately, or rather, in this particular case, unfortunately, Englishmen have a great faith in the wise government, both central and local, of their country—a great respect for, and belief in, the sanitary officials and those who have the guardianship of the public health, and it is deplorable that the public health authorities, the Local Government Board, and the Imperial Parliament, should allow this public confidence to be imposed upon.

So much with regard to our meat supplies; but, gentlemen, this is not the only direction in which the veterinary surgeon can help to improve matters. A pure milk supply is as important, nay, more important, than sound meat. That this is so is readily realised when we consider that, besides being of practically universal use in ordinary diet, milk, frequently uncooked, is especially the food of a large number of infants under one year old, and also of invalids, in both of which the natural defensive forces of the body are weak. One of the most serious questions for public health authorities is the high rate of infantile mortality, and more especially when we remember that, despite the progressive decline of the general death rate, this infantile rate has remained almost stationary for many years. That more than 12 per cent. of the children born in this country should die under one year old is a fact calculated to make us think long and seriously. Those general measures of improved sanitation which have produced such a marked decrease in the general death-rate might have been expected to show a similar, if less marked, effect on the infantile rate, and there is no doubt that but for these measures the rate would have been higher still.

Of many suggested causes, one explanation put forward by most medical officers of health, if not by all, is the growth of the practice of artificially feeding young children with cows' milk. I am quite aware that contamination after the milk leaves the cow's udder is the chief source of danger, especially in the poorer class of town dairy, and in the homes of the lower class people, where proper storage is impossible, but that the cow may be a very serious source of danger

admits of no doubt—in fact, is matter of common knowledge. There is, too, one important consideration, namely, that milk contaminated as it leaves the cow must affect injuriously all who partake of it, and may in the process of mixing infect milk from healthy cows, whereas milk contaminated in the house of the user can only affect the members of that household. To mention tuberculosis alone—notwithstanding Koch's pronouncement that infection of the human subject with bovine tuberculosis rarely if ever takes place—for there are equally eminent authorities both in this and other countries who hold the contrary view—the public at any rate have no hesitation in preferring the milk of healthy cows, and in the interim report of the present Royal Commission on Tuberculosis the need for continued precaution, in view of the danger the commissioners still consider probable, is once more urged.

Assuming that only cows with tuberculosis of the udder are likely to give infected milk, allow me to quote some words of the most eminent authority in this country—I mean, of course, Sir John M'Fadyean. He said (and I have it from him that he sees no reason to alter his opinion) "My experience leads me to think that about 2 per cent. of the cows in the milking herds of this country are affected with tuberculosis of the udder." "The present state of the law, or rather the almost entire absence of any law dealing with tuberculous udder disease in cows, is a scandal and a reproach to civilisation. It hardly sounds credible, but it is a fact that the owners of a cow in the most advanced state of tuberculosis, and exhibiting the most manifest signs of udder disease, may sell that cow's milk for human food as long as the sale has not been specially interdicted on the certificate of a veterinary surgeon."

This condemnation is not a whit too strong for the existing state of affairs, and it is earnestly to be hoped that the recommendations of the last Royal Commission on Tuberculosis—recommendations which if adopted would cover most of the other diseases in addition to tubercle—may be made the basis of new legal enactments. The important points are: (1) The compulsory notification by the owners of dairy cows of all udder disease; (2) the conferring of powers upon local authorities to inspect not only cowsheds or byres within their own district, but also any outside cows and byres from which milk is sent into their district; and most important of all (3) the substitution of *shall* for *may* in the clause of the Milkshops, Dairies and Cowsheds Order which authorises a local authority to appoint an inspector and make regulations for the inspection and management of cows and cowsheds.

It is obviously unfair that the conditions under which a cowkeeper may conduct his business in one district should be made more rigorous than those for his competitors in a neighbouring one, and this lack of uniformity simply means that the diseased animals condemned and ejected from the dairies of a closely inspected district are sold into another where they may be used to supply milk to the unsuspecting inhabitants without let or hindrance.

I have dealt at some length with these two questions of meat inspection and dairy inspection because these questions affect every member of the community, and it is in these two directions that the veterinary surgeon can best claim the right to serve the public

generally, but these are by no means our only functions. The horse-owning public is still a large one, and, apart from the treatment of disease, the advice of a veterinary surgeon with regard to the building of stables, feeding of studs of horses, and the prevention of epidemics, is still economically a sound investment. The Army Veterinary Corps holds an important position in the service and is increasingly popular, whilst the prospects of the department have greatly improved within the last few years.

Then, too, we have faith in our ability to deal with and eradicate glanders if only the opportunity were afforded, and the veterinary profession can point with pride to the almost entire absence at the present time of those contagious diseases which have caused such loss to the stockowners of this country in the past. By the adoption of expert veterinary advice, together with the loyal and energetic co-operation of the local practitioner, these diseases have been stamped out, and we can reasonably claim to be allowed to advise and carry out measures for dealing with the contagious diseases of animals that still remain.

Much more might be said, many other possibilities of useful service, both at home and in our colonies, could be mentioned, but I think enough has been adduced to substantiate my claim that the services of the well-equipped and scientific veterinarian were never more needed in the public interest than at the present time.

Let me now turn to this question of equipment. I have said that our best men are turned out better qualified to serve in all the directions indicated than ever before. To put this to the test we may consider what is required of the veterinary student before he can obtain his diploma. First it is essential that he should pass a preliminary examination in general knowledge in order that the standard of education shall be such as to fit the candidate for his professional studies. A few years ago the standard required in the preliminary examination was the same as that for entering the medical profession. Then unfortunately that equality was allowed to be upset; the medical profession, seeing the general advancement in education and educational facilities, raised their standard, whilst ours not only did not rise, but was actually lowered. That mistake, sir, has been rectified, and at the present time the preliminary examination required of veterinary students is equal to that demanded from students of human medicine. But even during the existence of the low standard it is interesting to note that many students have entered this College after having passed the matriculation examination of the University of London, and it is earnestly to be hoped that this will be true of greatly increasing numbers in view of the right of entry it provides to the avenues of science which lead up to the veterinary B.Sc.

May I here say just a word as to the supreme importance of the choice of subjects a boy shall take in his last two or three years at school. To an intending veterinary student the subjects of greatest importance are English, mathematics, Latin and such natural sciences as chemistry, physics, and botany, with German as the modern language. Instead of this choice, boys after leaving school are often faced with the necessity of learning an entirely new subject in order to pass the preliminary examination, and are quite ignorant of even the rudiments of the sciences on which all our practice is founded.

Arrived at College, a student must take the ordinary four years' course in order to obtain the diploma of Member of the Royal College of Veterinary Surgeons, and in fact, to become a veterinary surgeon. That there is this one and only portal to professional membership is, and will still more be, an inestimable benefit to the profession, but to preserve this position intact the profession must see to it that as an examining and diploma-granting body their methods are up to modern requirements. Survival is only to the fit, the law of life is progression or evolution, and there are some anomalies in connection with the present methods of conducting the professional examinations which will have to be removed. Teachers should be associated with independent outside examiners on the examining board, and this is not only done in all our Universities, but it is the system adopted in the veterinary schools of France, Germany, and Denmark. Again, the peregrinations of twenty or more examiners to five different colleges in various parts of the three kingdoms, with a crossing of the Irish Sea and a railway journey to Scotland to upset their carefully regulated pass-standard, is scarcely to be defended at this time of day. Students of law, of Medicine, of Engineering, all have to come, at their own expense, to a centre for examination, at any rate in the practical parts of their examinations, if not for the written part, and by this system all receive the same treatment, a similar examination or a similar standard.

But, gentlemen, there are students, an increasing number I am happy to think, who are not satisfied with the diploma of membership of the Royal College of Veterinary Surgeons alone, and for these there are in this College ample facilities for furthur work. Members of our staff are now recognised teachers of the University of London, and it is possible for a student to take complete classes for the four examinations necessary to obtain the B.Sc. degree, along with, or in addition to, his ordinary work. We have to record the pleasing fact that two of our students passed the first part of the Intermediate Science Examination, *i.e.*, in Anatomy, Biology, and Organic Chemistry, in July last, whilst a third passed the Preliminary Scientific examination, and it is to be hoped these successes will spur on many more students to do likewise. That the B.Sc. degree is worth striving for I have no shadow of doubt, both for the knowledge of which it is the evidence and also as a qualification which is bound to carry much weight in the minds of municipal and other public authorities called upon to make veterinary appointments. But, sir, the recognition of teachers of this College by the University of London means much to every student within these walls. It means better teaching facilities, more laboratory accommodation, an enlarged staff, and ample means of acquiring knowledge of all the branches which go to make up the equipment of the veterinarian. To specify one subject, the importance of some knowledge of physics, especially of electricity and heat, in the study of chemistry, of physiology, and of science, has long been recognised, and provision has now been made for supplying this need. In many cases, however, the difficulties in the way of obtaining the B.Sc. degree are too great to be overcome.

But this does not exhaust the facilities enjoyed by a student of this College. After graduating M.R.C.V.S., a student may take a two months' course in practical bacteriology and in the study of tropical

diseases, and this course from its inception has been deservedly popular with those desiring appointments in India or the Colonies. It has also been used as a vantage ground from which the Fellowship of the Royal College of Veterinary Surgeons was easily attainable, and the certificate of satisfactory attendance at this course is bound to be increasingly valuable in obtaining appointments to Veterinary Public Health posts.

One other remark about the opportunities open to students of this institution, and that with regard to the staff appointments. From time to time there is open the coveted post of assistant to the Principal in his bacteriological and pathological work; then there are the two annual appointments of hospital surgeon and tutor, both of which afford valuable experience in surgery and clinical medicine, and also in that intercourse with students and clients, which is so important a factor in every-day practice.

With this brief sketch I must leave to your judgment the validity of the second claim I made, namely, that our best men are turned out better equipped than ever before. I have said our best men, and I feel sure the public authorities will want our best men, the best men the profession can provide, and I have every confidence in claiming that here in the Royal Veterinary College are facilities for scientific training, and for academic distinction, equal to, if not better than, those of any other veterinary school in the United Kingdom. At the same time, the profession may congratulate itself on the fact that the schools generally are improving; that university recognition is widening out to include them all; that possibilities for research work in pathology and hygiene are multiplying, and that the position of the veterinary surgeon in State medicine is assured.

Now it remains to say a few words to the students in my audience. This may seem to be a matter of custom only, but I value the opportunity afforded me because probably I am more in touch with student life than some who have spoken from this place, at any rate it is not so long since my own student days here. In college work, let me advise those who are here for the first time to work for the highest positions, not the minimum—for a pass. This is hackneyed advice, but at the present day scholarship qualifications, scientific and accurate knowledge, practical as well as theoretical, count for more than ever. A man's capacity and powers of useful work are more severely tested and gauged than formerly, both on account of competition and also because of the increased knowledge of the public generally on technical matters, and from a purely commercial standpoint it is of supreme importance that no opportunity of gaining knowledge and distinction should be thrown away.

Then may I strongly advise you to make the college the centre for social and recreative life, as well as for professional culture. Join the various sections of college games, and not outside clubs, so that you are not available when wanted to support the college to which you belong. Our record in sports is not to be lightly esteemed, and it might have been better if the spirit of loyalty had been general among the students. In addition to games there is the Veterinary Medical Association, of which all students are *ipso facto* members, where papers on professional subjects are read and discussed week by week, and where all interesting cases met with in practice should certainly be

recorded. Lastly, I may mention the students' paper—*The Veterinary Student*—well worthy of support, and capable of materially influencing corporate college life.

Think highly of your college, take your full share in its common life; improve it where you can, but at any rate do not stand aloof and coldly criticise.

In conclusion, I have to utter a note of regret. No one who has been present here on occasions similar to this, can fail to have noticed the absence from our midst of Sir George Brown. He was sometimes aptly called the "grand old man of the veterinary profession," and the profession as a whole mourns his loss, but to this college Sir George Brown was bound by the strongest ties. His student days commenced here in 1845, and from that time to the day of his death, whether as student or teacher, as principal or governor, the Royal Veterinary College always held a foremost place in his heart, and we feel that we have lost a powerful and devoted friend.

One other word, and that to say how sorry we are—I speak for students and staff alike—that we are losing from amongst us our old friend, Professor Bottomley. Throughout his ten years at the College Professor Bottomly, by his unfailing good humour and kindliness has endeared himself to us all, and we shall miss him much in the days to come. That he may long be spared and have good success in all his work is the sincere wish of all his old colleagues and students at the Royal Veterinary College, and we shall hope to see him present at many more opening days. To our new colleagues we offer a very cordial welcome, the depth of which they will be able to judge better than I can anticipate.

My Lords and Gentlemen, having taxed your patience I am afraid somewhat severely, I have now only to express the hope that this session of 1906-1907 on which we now enter, may prove memorable in the annals of the Royal Veterinary College for good work well done, and crowned with success.

THE OPENING ADDRESS OF THE EIGHTY-FOURTH SESSION OF THE ROYAL (DICK) VETERINARY COLLEGE, EDINBURGH.

DELIVERED BY MR. JOHN MALCOLM, F.R.C.V.S., F.H.A.S.

Sir William Turner, Ladies and Gentlemen,—My first duty is to express my pride and pleasure at being invited to be here to-day. When I received from Principal Dewar the invitation of the College Board of Management I was very dubious about my ability to comply. Previously arranged business and holiday engagements combined to intervene so awkwardly that my wonder now is to find myself here; but a feeling of justifiable gratification at the request, a deep sense of everlasting indebtedness to my Alma Mater, with the incumbent obligation to honour her behests where possible, and the inalienable desire to serve her in any capacity in my power, settled the question. Now that I am here I feel much which I cannot express. Remember I am no teacher, no Councilman, no practised speaker, simply a municipal

veterinary officer, whose lines have fallen in not unpleasant places, and whose ambition is practically consummated in the endeavour to fulfil efficiently the duties of a somewhat humble though not unonerous post. The sole claim left to me to advance, in justification of my presence here to-day, is that I am a Scotsman, cradled, in the veterinary sense, at Clyde Street School, of which venerated Institution I am proud to be an alumnus. It will be within the knowledge of many of you that at these time-honoured gatherings students always expect to receive good advice, and as a rule they get it. Other things may change but no appreciable change is recognised in that. As it is to-day, so it was thirty years ago. We expected good advice then and we were not disappointed, but it is no secret that we did not always take it. Present-day students assure me that in this latter respect at least they are not only the type but the true offspring of their forbears. A saying of Carlyle's, so pertinent to the present occasion and so clearly recording the sage's conviction of the futility of giving advice that would not be acted upon, may be recalled. His actual words—"That advice that is not to be translated into action is just as well suppressed"—embody such an obvious truth expressed in so apt and lucid terms as to warrant its inscription among our treasured maxims. Assuming that you will agree in the verity and wisdom of his dictum, I may further assume that you will approve as wise discretion on my part, my resolution to confine any counsel I may feel constrained to offer within the strictest limits.

It may be taken for granted that all who have come here to pursue their studies will have passed the required preliminary examination, and may now be congratulated on possessing an educational hall mark equal to that necessary for matriculation by students in the medical and other learned professions. Present satisfaction at the standard now established tends to efface the recollection of former impatience at the delay prior to its realisation. Within our experience the test of preliminary preparation was little other than a matter of form, any candidate's relegation to further study being unknown; therefore, notwithstanding delay, it is evident that the pace of progress has been on the whole comparatively rapid. This is aptly illustrated in the words of your principal, who, the other day, in addressing an Edinburgh meeting of veterinarians said: "While other professions have been raising their educational tests, that of the veterinary profession has been raised much faster, until it has overhauled and is now on a level with that of the medical profession." Some few there are who still question the utility of the standard of training on the ground that there is no reward within our gates to adequately repay it. In the pecuniary sense there may be some justification for their contention; in the scientific sense there is none. If anyone here is taking up the study of veterinary science solely or mainly from its fancied financial prospects he will do well to pause, and count the cost before proceeding further, for the odds are heavy against any ambitious pecuniary expectations ever being realised therefrom. Until recently, it is not improbable that a section of the outside public over-estimated a veterinarian's prospects; now the motor car bogey has dispelled any illusion, and the present tendency is to go to the other extreme. As a consequence the fiduciary aspect of our calling is heavily depreciated—a fact to which the reduction that has taken place in the annual entrants to the profession bears eloquent testimony. I must confess that until quite recently I had

not fully realised the extent of this falling off or its inevitable effect on the schools; but the facts are incontrovertible—the average annual addition during the last five years from all the schools was only 77, whereas during the three preceding quinquennial periods it was 98 and 148 and 122 respectively. The only crumb of consolation apparent for the schools is that the recent returns present no indication of any further reduction, though for the members there may be some satisfaction in the ensuing prospect of lessened competition. Apart from this there is some gratification in knowing that the reduction has mainly been in what may be termed the outside recruits; the sons and relatives of veterinarians continue to join our ranks in practically undiminished numbers. Here at least is a hopeful portent, and the manifest faith of men with inside knowledge should encourage external students to take a more confident view of the future possibilities of their chosen calling.

Whether the veterinary proclivities of you students are hereditary or acquired, the fact that you are here under present circumstances is fair evidence of your conviction that in the veterinary profession you will find your natural vocation. Having counted the cost you face the issue, and on the whole may do so with every confidence. Granted the natural predilection, I for one, after a fair measure of experience, agree with you in thinking a veterinarian's life a not undesirable one. At any rate I can honestly say I know of no other calling in which personally I would have equal happiness and pleasure in the everyday performance of my work.

The past history of Clyde Street School, as of the veterinary profession generally, has been so frequently and well recorded as to render any further attempt at historical review for the time being superfluous. I have therefore to look elsewhere for my theme of address, and in the current transitional state of things I naturally turn to collegiate instruction and professional prospects as subjects likely to possess the requisite interest. Even at the risk of being tedious, I cannot omit a passing reference to the many changes that have taken place in matters veterinary since, thirty years ago next Friday, a chance incident first guided my steps to Edinburgh and casually to Clyde Street; nor can I entirely suppress here the vivid intervening memories of those busy bygone delightful days spent at the fountain of veterinary knowledge in this ever beautiful city, which to its general fascination possesses for me an abiding attraction from the lifelong friendships and attachments formed there, and among which I am proud to reckon that of your late Principal, pre-eminently the student's friend, Professor Walley, and that of your present able Principal, Professor Dewar. The old college has been remodelled and rebuilt and the whole staff changed, but their indelible impress survives. Need I remind you that among her alumni to-day are enumerated the Government Chief Civil Veterinary Officer, the Principals of four out of the five Veterinary Schools in Great Britain, and many other distinguished men: or that one of these principals, for years a distinguished teacher in Clyde Street, has most deservedly been honoured in an unprecedented degree by a threefold recognition—by His Majesty for services to the State, by veterinary *confrères* for untiring and exceptionally brilliant services to his profession, and now, last week, by Aberdeen University for original contributions to veterinary science and literature. I am sure past and present

Clyde Street students, one and all, join in heartily congratulating Sir John M'Fadyean, our most distinguished fellow alumnus, on his richly merited and unique distinction. Clearly present day Clyde Street students have a high standard to maintain, but Edinburgh students must have profoundly changed if they failed to give a good account of themselves in the future as in the past.

The Dick College buildings, as we are reminded in the current prospectus, are now "on a level with the State-aided veterinary institutions of foreign countries," and the professorial body such that "the strength of the teaching staff is not excelled by that of any other veterinary school in the country," and as you, the Clyde Street veterinary students of to-day, are presumably the equal at least of those of former times, the reputation of our Alma Mater may safely be left in your hands.

A moment ago I referred to the changes observed in veterinary matters since I had the privilege of studying here. One of the most evident and striking is the difference in length of the period of study. Then two winters and one summer sufficed, now four years are essential; and students aspiring to a University degree are being recommended to take five years. This foreshadowing already of a future addition to the present period of study is perhaps even more apparent in the regular course now followed by the majority of the best men in supplementing their ante-graduate training by a post-graduate course in practical veterinary pathology and bacteriology. Indeed, so important has this post-graduate qualification already become that candidates for Government, Public Health, Colonial, and Indian appointments are as a rule passed over in the selection if they do not possess it. I am not aware whether any provision has been made for holding a post-graduate course in practical bacteriology here, but in view of the now generally recognised necessity of a special knowledge of practical veterinary bacteriological microscopy, particularly by candidates for home and colonial public appointments, and therefore by many Clyde Street men, the question of inaugurating a course has no doubt received due attention from the Board of Management.

Turning, however, from the post-graduate course and the length of the period of instruction to the consideration of the ordinary college curriculum, it may be said, broadly speaking, that the present curriculum has met with general approval, although it has some acknowledged minor defects. Hitherto any amendment of these has been discountenanced, but now the Council may fairly be asked to consider how best to amend them. In deliberating this, the experience not only of teachers and examiners but of recent graduates and present students should be received. With respect to the first year's subjects of study I understand there is a very general consensus of opinion among students that these are defective in not including any subject of immediate practical interest to lovers of animals, and that partly as a consequence of this omission many of the students find this the most tedious and trying year of the course. This omission is a real defect, and it should be remedied. This would be easy enough were it not that the first year's course is already felt to be a heavy one, and as all its subjects are essential and in their natural position, it cannot conveniently be lightened. Notwithstanding this I am of opinion that stable management could be included among the first year's subjects

with marked benefit. It is in reality an easy practical subject, involving little or no mental strain. Coming at this early period it would give the student the needful direct interest in live stock from the beginning, and it could be undertaken in a way that would provide him with a change of work more in the nature of a pastime than a study, affording him thereby a highly necessary and welcome relief to the more difficult scientific subjects. In the second year's subjects I would suggest the substitution of zootechny in place of stable management, at least so far as it includes the study of equine form and mechanical aptitude, and a study of the various breeds of domestic animals. The wonder to me is why this has not yet been included in the curriculum. Its practical utility cannot be questioned, and moreover, no other subject goes so well with anatomy and physiology. Although ordinary horse shoeing is conveniently placed, coming in its natural position in the second year, surgical shoeing should be transferred to its proper place in the fourth year's surgical section. According to the recent discussion the present teaching and examination in horse shoeing is mainly theoretical and non-practical, but clearly a measure of practical work is required. In the third year's course regional and surgical anatomy should be added. This would bridge the present undue interval between anatomical and surgical study, and fill an essential but now vacant part in anatomical instruction. In this year also a commencement should be made with the systematic study of elementary medicine and surgery, and generally in the routine details of practical work. The chief defect of the fourth year's instruction in most veterinary institutions is the lack of general clinical work. Mr. MacCallum, in his admirable address last year, told you that it was the ambition of the Board of Management to provide a veterinary training for Clyde Street students second to none in Europe, and he pointed out that to secure this it was necessary that increased facilities for practical work, particularly in obstetrics and in other directions, should be provided. A determined effort should be made to comply with this suggestion, and should it be desirable to take a farm or even to transfer the entire college to a more suitable site elsewhere, it is to be hoped that any financial or other difficulty in the way may speedily be removed. Mr. MacCallum's munificent benefaction has already done so much, in its time of special stress, for what is essentially a public national institution, that Government may now well be approached for any further outlay necessary. Not only do University and other educational bodies in need receive Government help, but the grants to the Dublin and London Veterinary Colleges provide specific precedent, if that be necessary, for extending similar treatment to the Edinburgh Veterinary College. Surely Scotland alone is not to be ostracised by Government in the matter of veterinary State aid. With a Scottish Prime Minister, a Scottish member as Chancellor of the Exchequer, and English and Irish precedents, there ought to be no insurmountable difficulty in obtaining for Edinburgh Veterinary School some equitable measure of assistance similar to that given to London or to Dublin. Yet it is not improbable that the existence of other two unaided schools may be used as an argument against any such grant on the plea that Government help to Clyde Street would unfairly handicap these schools—but any force in this argument was entirely removed by the London and Dublin grants.

Of course it would simplify matters and remove any sense of unfairness if all schools were aided, but to ask Government to endow five schools to educate an annual aggregate of 80 new members, or an average of 16 per school (or apart from London an average of 10 per school) would be no small order. Indeed, in the light of these numbers it seems clear that we are rather over schooled. Three schools, one in England, Scotland, and Ireland respectively, appears sufficient for all our requirements, and, moreover, the three could be better equipped, better staffed, and would be far more likely to receive requisite State aid than five schools. However, the five schools exist, and are likely to continue. Two of these we have already seen receive direct Government aid; the Glasgow school being a private proprietary institution is ineligible for aid; Liverpool receives no direct aid, though it may be indirectly benefited by the University general Education Grant, if it is, that is another point in your favour, but even if it is not that is no reason for not putting Edinburgh School on a par with London and Dublin schools, nor for refusing to Scotland Government veterinary educational help equivalent to that given to England and to Ireland.

In connection with Clyde Street's requirements, I have already recalled to you Mr. MacCallum's very strong plea for the provision of greater practical facilities, and I now venture to submit that most of our veterinary schools have another requirement almost equally pressing, viz., the provision of adequate specialist professorial staffs solely devoted to the duties of their office and unhampered by undue duplication of functions. It is only thus that members of a staff can have requisite time to keep themselves in touch with what is being done and thought elsewhere, or to undertake the original work necessary if they are to have their due part in advancing our knowledge. However much good work they themselves may have done, those teachers who have been overweighted by duplicate professional functions, or have been without the trained veterinary experience necessary, will be the very first to appreciate the necessity for such a needful reform. Of course the difficulty here, as in many other reforms, is finance, and I must confess that I cannot see how it is to be overcome unless by Government help or by the intervention of generous private benefactors, for it is quite clear that the students' fees alone will never secure it. If all our schools were manned by staffs of trained specialists, and each member devoted his energies specifically to the advancement of the veterinary side of his subject, the schools would not only maintain their position as teaching institutions for veterinary students, but could with justice keep their right place in the educational world as institutions taking a regulated specific part in the endeavour to advance definite knowledge.

Before leaving the subject of collegiate training, there is just one other point that I wish to refer to, and that is the present want of uniformity in the scholastic terms. To any ordinary member with little inside knowledge it seems more than curious that two institutions here should be unable to agree with three institutions there respecting the sessional terms best suited to educational requirements. This lack of uniformity in the sessional term gives rise to a corresponding lack of uniformity in the various professional examinations. One effect of this is to add to the already heavy cost of the R.C.V.S.

Another is to increase the inconvenience of examiners, which as a consequence tends to limit the list of available suitable men. As nowadays most, if not all, other educational bodies manage to agree upon common ground as to the terms most suitable, surely it is not too much to expect similar business-like action from our teaching schools.

Some discussion, as many of you probably know, has recently taken place in influential quarters respecting the examinations. The existing arrangement, the one portal system with examination by non-teaching examiners, has been in force over a quarter of a century. No member now appears to doubt the benefit of having only one port of entrance, and the present discussion has chiefly been whether the Examining Board should be broadened by adding the teachers. Examinations are admittedly a very imperfect way of accurately ascertaining students' qualifications. Yet as apparently no better system can be devised, it is desirable that they should be carried out in the most approved way, and adventitiously helped in every legitimate available manner. Probably it was with this in view that the R.C.V.S., in addition to fixing the number of lectures, has recently—commendably, we think—prescribed the minimum number of hours of practical instruction in each subject prior to the examination. Having gone so far, they are now invited to go a step further and supplement the external examiners by adding in each case the student's teachers, or, as an alternative, to utilise, in doubtful cases, the student's class records of attendance and work. The obvious objections to this latter seem sufficient to render the suggestion untenable, and, moreover, some students such as now pass might have marked cause for dissatisfaction.

With respect to the introduction of teacher examiners, the precedent of prevalent internal University examinations has been put forward in support of the change, but the chief reason advanced in its favour is that under the present system "good and efficient students" are constantly being stopped. So far as University precedent is concerned, the analogy, I understand, fails in that the internal examinations of a University are for its own students, and that, generally speaking, when external students are examined, as, for example, for the external degrees of the London University, the Examining Board is essentially external.

To what extent good and efficient students fail under the present regulations I am not in a position to judge, but previous experience inclines me to the belief that, as a general rule, good all-round students pass, and when a student regarded as efficient has been stopped, he, although perhaps brilliant in some subjects, has generally had some one-sided limitation which in some way has come markedly under the notice of the examiner, and thereby had perhaps a material, if not an undue influence in the rejection, particularly if the limitation had been evidenced in the practical work of the section. Be that as it may, it is very questionable whether, under existing conditions, it would be to the advantage of either students or teachers to have a mixed Board. We all admit unquestioningly the professional benefit of our one portal system. We further admit, in the interest of uniformity, the advantage there would be in having one examination centre, though in practice this seems unattainable, and as a compromise the

next best plan has been adopted, viz., that of holding the examination at the several teaching centres under one Board. This, under external examiners, should provide essential uniformity; nevertheless, I believe there is from time to time in one quarter or another a feeling that, despite every effort on the part of the examiners to be impartial, the influence of surroundings affects results.

If that is so now, how much more would it be so with teachers on the Board? In effect, assuming that each teacher examined only his own students, it would be liable to introduce, however unintentionally, many of the defects of a many portal system, and at the same time it would cast upon the teacher the onerous obligation of rejecting men of his own teaching—a disagreeable duty from which he is now saved. The only safeguard against this under a mixed Board would be that the teachers should form a joint section and assist in the examination of each other's students, a plan which I venture to think would neither be agreeable to the teacher, nor in the interest of the student, nor beneficial to the pass list.

All things considered, under our special circumstances the external Board, notwithstanding inherent imperfections, is immeasurably the best for all concerned. The present Board has been credited with being on the whole a very fair one, but if further improvement is necessary, the way in which it most obviously lies is for the Council, guided as it is on examination matters by the schools, to take even still greater care in the future only to select the men most fitted for the purpose.

Within the last few years a movement has been in progress in various quarters with the view of inducing veterinarians to take a university degree in the belief that the possession of such a degree would enhance our position in public estimation. In support of the movement we are told that, though many of our men are of University grade, yet, as they lack a University hall-mark, they are not accorded the recognition its possession would give. No one more fully values the beneficial effect of University training and surroundings than I do, nor appreciates more the general and specific benefit that some of our candidates who aim at special positions would be likely to derive from a medical or science course, with its valuable information on cognate subjects and additional training in scientific method; but valuable as these are, and advantageous as a degree must be in aid of our progress, I believe, as I have indicated in speaking of college staffs, that even a more valuable and a more reliable way in which to promote our general professional advance is to entrust the teaching of our candidates only to scientific veterinarian specialists, or in the more strictly science subjects to specialists having practical trained experience in their subjects. Although in a sense we are a branch of the medical profession, we are essentially specialists following a particular calling, and require not only a broad and general, but a particular and specialised training in the various branches of study we pursue. On this special and practical veterinary training, even more than on the possession of a degree, the future of our profession depends. In the meantime, in response to the desire for a degree, a B.Sc. in Veterinary Science has been established by London University, and this is open not only to students from Camden Town, but to those from the other veterinary colleges. At present the Univer-

sity of Edinburgh is establishing the degrees of Bachelor of Veterinary Medicine and Surgery and Doctor of Veterinary Medicine and Surgery. The Bachelor degree course, according to the University Court Ordinance, appears to be on all fours with the M.R.C.V.S. course, save that it will not be necessary to pass all the subjects in the first and third divisions at one time, whereas under the R.C.V.S. regulations he must pass all at one time. So far as I can gather from the ordinance, candidates will not require to take any extra lectures (save, perhaps, a few on physics), or to undergo any extra training for the University Bachelor degree other than is necessary for the R.C.V.S. diploma, and apparently the training for the latter will suffice for the former. The new Bachelor Degree will afford candidates an opportunity of acquiring the desired University hall-mark, and for aspiring candidates may be relied upon to provide an additional incentive to study. The ordinance does not make it quite clear in what other way it is to advance our knowledge and teaching of veterinary science, but its promoters claim that the University course will really be more advanced and the examination more searching than the R.C.V.S. course and examination, and no doubt we shall have evidence of how they mean to pursue this in due time.

I am afraid I have employed all the time at my disposal in discussing professional training, and can only now refer to professional prospects in the fewest possible words. An idea prevails in many quarters that the veterinary profession has seen its best days, and that in the future, save possibly as public health auxiliaries, our services are likely to be little in demand. The most obvious way to gauge the accuracy of this is to take stock, if I may so say, of the chief openings for members, and try to see therefrom what evidence of decline or otherwise is presented. The openings, as you know, are mainly of two kinds, viz., private practice and public appointments. The public appointments, whether civil or military, show no sign of decrease. Army appointments are as numerous as ever, and the Army Veterinary Service is now good, both socially and financially, and affords a fine opportunity for young graduates with military inclinations. The Veterinary Department of the Board of Agriculture has been markedly increased, and has on its permanent staff six times as many men as formerly, and will probably further increase, though some of you may say that the Board's staff is more likely to decrease, seeing that contagious diseases have been largely stamped out. It is true that cattle plague, pleuro-pneumonia, foot-and-mouth disease, rabies, and possibly contagious lymphangitis, have been for the time being stamped out, but there is no saying how soon our ports may be re-opened and the recurrence of any of these take place. However that may be, we have glanders, anthrax, and swine fever to be dealt with, besides a clear foreshadowing of the scheduling of swine erysipelas, contagious abortion, redwater, and possibly braxy; but above all, and more important than all, there remains tuberculosis. This is now so clearly recognised to be solely a contagious disease, is of so profound importance in public health, and though so insidious yet so drastic a bovine and porcine scourge, that public opinion will ere long compel Government to deal with it. At the present time it is simply played with. The destruction of a carcase here and the suspension of a dairy cow there can have no real effect on its prevalence. Whenever it is tackled in

earnest, it must be at its source—the farm—and that will be a big undertaking, entailing among many other things an addition of the Board of Agriculture Veterinary Staff. In Municipal and other Local Authority appointments, in public health or otherwise, there has been a marked extension in the past, and as further regulations of the meat and milk trades will almost certainly demand an increase in trained expert inspectors, the extension in the future will in all likelihood be still more marked. Of the already wide and still increasing field in the Colonies there is evidence every day in the vacancies that are being advertised. As for India, the Indian Civil Veterinary appointments are also increasing, and as they are now reckoned among the chief professional prizes open to members, competition for them grows keen. Recently when writing an old assistant and friend of mine, who was educated within these walls, and is now on the Indian staff, I asked for some suggestion for this address. In reply he said, "There is a great field for research work and for preventive medicine out here. There are great tracts of country without any professional aid at all." I should have liked to say much more on public appointments, but time forbids.

Now, in conclusion, just a word on the motor and its effect on the private practitioner's work in town and country. In rural districts, notwithstanding all we hear, the motor has not yet displaced very many horses, whatever it may do in the future. The Board of Agriculture's statistics for 1905 show the number of agricultural horses in these islands to be greater than at any former time, and although the partial return to hand for 1906 shows a slight reduction, in comparison with that for 1905, it excels any other former return, except, perhaps, that of 1895. Parenthetically I may here remark that as it is with horses, so it is with cattle, only the increase in number is more marked, the latest return being the highest recorded, the number in Great Britain alone last year for the first time exceeding 7,000,000, and as it is with numbers so it is with prices both of horses and cattle—they were never higher. Though horses in agricultural districts have increased in the aggregate, there is unofficial evidence to show that light horses suitable for carriage and other harness work have actually diminished, the recorded increase being due to a marked increase in heavy horses. The decrease in light horses is probably in part due to motor substitution, and in part to breeders' erroneous anticipation of diminished demand, but is mainly due to the increased difficulty and risk in using young light horses on our motor dominated roads—many farmers on this account, notwithstanding current high prices, no longer deeming light horse breeding a desirable undertaking. In urban districts, unfortunately, no record of the number of horses has been kept, and therefore there are no reliable statistics for comparing the present and the past, and we have to depend upon less certain data for our conclusions. The electric tram annihilated the tram horse, and practically, save in London, the omnibus horse; and now the motor 'bus has challenged the London 'bus horse. The motor's greater speed attracts the multitude, so anxious nowadays to save time, and in spite of its many defects, the chances are it would win were it not for cost. The motor 'bus has to earn a profit—that is its *raison d'être*, but its capability of doing so seems very doubtful. At any rate, the directors of two important public companies—the London General Omnibus Co. and the London Road Car Co.—who are among its chief users, find it expedient to adopt the

significant procedure, practically unknown in new successful undertakings, of suppressing the result in the face of a capital depreciation last year of 29 per cent. and 36 per cent., and a dividend reduction last half year of 25 per cent. and 37½ per cent. respectively. While the success or failure of the motor 'bus may still be in doubt, the failure of the ordinary industrial motor vehicle, for the time being at least, is practically settled. As an illustration of this I may record that some months ago one of our largest municipalities made an exhaustive enquiry as to the relative pecuniary merits of horses and motors for light van work, and the result was an unhesitating decision in favour of the horse. Among others I was applied to for information, and in consequence of this I circularised every firm in Birmingham and district reported to be using motor vehicles industrially, and enquired their experience of the relative cost of horse and of motor traction. All, save the user of one van, who gave no data, replied that in their experience motor traction was much more expensive than horse traction; and where an accurate account had been kept the difference was very marked. The motor car, being a pleasure vehicle of the well-to-do, is in a different category to the industrial van. Here cost is not the governing factor; and fashion, pleasure, convenience, and the mechanician's bias have combined to secure rapidly a wide extension whose limit is not in sight. In London, from its power of minimising distance, and probably from the force of fashion, the motor has displaced a considerable number of carriage horses, but in urban provincial centres such as Birmingham, the number displaced is far less appreciable. Probably this is partly explained by the fact that, in comparison with that of London, provincial urban social distance is shorter, and fashion less potent. However that may be, it is clear from the number of motors in use that the vast majority of motorists were not horse owners, and of the minority who were, only a few have ceased to keep horses, though a number have reduced their studs. From the veterinarian's point of view there is a satisfaction in being able to set against this carriage horse displacement, an increase of almost, if not of quite, equal degree in cart and trade horses. The result is that, apart from the displaced tram and omnibus horse, urban equine stock appears to have undergone little if any decrease. At any rate in Birmingham, the present stock of horses, subject to the aforementioned limitation, is equal in the aggregate to that at any former period, and in this respect, speaking generally, I think we may fairly assume that Birmingham is approximately typical of other provincial urban centres. The veterinary field, notwithstanding all we hear to the contrary, has evidently undergone very slight if any curtailment, and affords no justification for pessimism. On the contrary, when we remember that the agricultural stock of horses and cattle is greater than it has ever been before: that urban horses (save for the displaced tram and omnibus horse) are still practically unreduced; that race horses, hunters, and polo ponies do not decrease, and that the list of public appointments in Government, Municipal, Colonial, and Indian services continues to extend, it seems to me that there is not only no justification for depression or for the pessimistic views frequently expressed, but very good grounds for regarding the outlook as encouraging. Clearly, notwithstanding the advent of motors, there is nothing, so far, within the veterinary horizon to make a man with innate veterinary proclivities

turn aside from his natural path in life from fear of the prospect; and though, assuredly, our profession entails on its followers a full measure of life's trials and difficulties, yet for anyone whose natural bent lies therein it has ample compensating rewards in its freedom and life in the open air, in the usually interesting and occasionally fascinating nature of the work, and generally in its being a manly, honest, humane vocation which in some of its aspects provides "the profit of industry with the pleasure of a pastime."

THE OPENING ADDRESS AT THE ROYAL VETERINARY COLLEGE OF IRELAND.

BY PRINCIPAL METTAM, B.SC., M.R.C.V.S.

The Prevention of Tuberculosis.

On October 3, the Seventh Session of the Royal Veterinary College of Ireland was opened in the Lecture Theatre of the College, the chair being occupied by Sir Christopher Nixon, Bart., the President of the Board of Governors. Before commencing his address Professor Mettam gave a few particulars respecting the work of the College during the year. The number of students receiving instruction was 150. Fifty freshmen joined during the session. At the examination of the Royal College of Veterinary Surgeons 140 students were presented, and of these 84 passed, or exactly 60 per cent. Of the 84 students who passed, 11 gained honours and 11 qualified as Members of the Royal College of Veterinary Surgeons. He thought, therefore, they might claim that last session was a successful one in every sense of the word. The medals won during the previous session were next distributed by the Chairman.

The Principal then read the inaugural address as follows: It is customary in the Veterinary Colleges to inaugurate the new session by the delivery of an address to the students, and to-day the duty has fallen to my lot. I have departed somewhat from the usual lines adopted, and have thought it would be of interest if I discussed, in general terms, tuberculosis, as it affects man and animals, from the standpoint of the veterinary pathologist. I also believe that in an inaugural address it is not unwise to introduce the student to a subject which he will be called upon to study closely, that he may realise thus early how serious indeed is the study of medicine from the comparative point of view, and how that, sooner or later, he will be called upon as a professional man and as a citizen to take his part in preventing disease.

It is universally admitted that the greatest strides made in medicine of late years have been along the lines of preventive medicine. For long years past it has been recognised that to prevent is better than to cure, and when we glance over the work that has been done in the prevention of malaria, for instance, we see the efficacy of preventive measures as compared with those of treatment. Now, it is a fact many diseases are preventable, and, if so, why are they not prevented? What is there to hinder the suppression of certain diseases or their entire eradication. A very superficial knowledge of infectious disease, the cause, the diverse ways in which the

virus is spread, is sufficient to explain how difficult is the realisation of the ideas of the optimist, how many factors interfere with the comsummation of our highest ideals. But though our hopes are not always realised, still we may strive to render disease less common, and to cut down the mortality, to save lives that would otherwise be sacrificed. In the estimation of any problem the best method is to view it from every standpoint; and to understand disease which affects animals of different species it is necessary to study the disease as it is manifested in each species.

If we are to study tuberculosis, we must not confine our attention wholly and solely to one species of animal; we must make a general survey. It is not my intention at the present moment to offer any observations upon the survey I have made, but I do think that the question of tuberculosis in man, *the white man's plague*, as it has been called, would be better understood, and in the end better controlled, if it were generally recognised that tuberculosis is a disease of the vertebrates and not of man alone. The *white man's plague* is the scourge of the vertebrates. The disease is common enough among the lower animals with, in this country, the exception of the sheep and goat. If tuberculosis in man is to be checked, not to say suppressed, it will be necessary to deal with the disease in other animals. I say this not with any idea of minimising the great good done by educating the populace as to the necessity of exercising every possible care to prevent contamination and the spread of the disease from man to man, but with the hope that the disease may be attacked at the fountain head and other sources of infection effectually checked. Whilst it is possible for the disease to spread by contaminated food, such as flesh and milk, will not all our efforts be rendered nugatory if we neglect to supervise our food supply? No matter what care is exercised in the home to prevent the spread of the disease among human beings, we must not ignore the fact that the disease may be brought into the family by the dog or cat, if suffering from tuberculosis! If a prudent general is laying siege to a fortress, does he not cut off all lines of communication between the beleaguered garrison and their friends? Would not his efforts be rendered of no effect if the besieged were allowed to receive supplies and reinforcements? Just so in tuberculosis—if intervention is to be effective we must cut off all the avenues by which infection may be conveyed.

The question of tuberculosis is one which is of extreme importance to the state, to municipalities, to public bodies, to the individual, and varied and manifold are the suggestions made as to prevention and suppression. Education of the afflicted and those in contact with him will do much good, and especially if both can be brought to understand that the patient is a standing menace to those about him, and that his secretions are capable of producing disease. The promiscuous dissemination of expectorated material should be sternly suppressed, but at the same time the patient, for his own sake, should be taught not to swallow it, since it is capable of reinfecting him and hastening his end. The expectorate should be received into suitable receptacles and destroyed either by fire or some strong antiseptic. Our public bodies might consider the question of supplying such receptacles to the poor consumptive living in his own home; he would appreciate the attention, his own sufferings would make him careful

to prevent infection of others, and destruction of the virus by the authorities would ensure that it had been properly disposed of. It is not, however, to the poor human consumptive that I desire to draw your attention, but rather to the avenues along which the virus may reach man, and it is to these avenues you must direct your attention. As I have mentioned previously, tuberculosis is a disease not of man alone, but of practically all animals. The horse, ox, pig, dog, cat, fowl, are common victims, rarely the sheep and goat, though they also may be infected readily when brought in contact with diseased animals. Of these animals the ox, pig, and fowl produce flesh for our food, the cow milk for food and drink, the dog and cat are pets, and admitted to our fireside. Flesh and milk obtained from tuberculous animals may be a source of the tuberculosis of man. Flesh, meaning thereby the red muscle, of, say, a beef steak, is not itself often the subject of tuberculosis, but sometimes the glands embedded between the muscles are diseased, and if the joint happens to be a large one, or one even of moderate size, the heat of roasting may not be sufficient to destroy the organisms in the interior. Moreover, flesh that is perfectly wholesome may be made dangerous by the knife smearing over it virus from a diseased gland. In the pig, and indeed in any animal where the disease has become generalised—that is, where the virus has become disseminated by the blood stream over the whole body—the flesh, though apparently wholesome, is dangerous. The danger, however, from the consumption of flesh obtained from animals suffering from tuberculosis is not great, though it exists, because we cook our flesh food more or less thoroughly. The danger lies mainly in the consumption of uncooked food, and with us that is milk. Milk, as we all know, is consumed raw, and most often as it comes from the cow. Further, the great milk drinkers are children and invalids. During early life milk forms the staple food of children at the time when, as von Behring states, the intestinal tract is particularly vulnerable. From statistics we know that intestinal tuberculosis is comparatively common in children. From the reports of the German Commission we learn that bacilli of the *typus bovinus* have been isolated from the bodies of children. It may then be inferred that milk has been the vehicle by which the virus has gained access to the body. Invalids are often enough placed upon a milk diet or upon preparations into which milk enters largely. Now, invalids are persons suffering from some complaint or other, and whose tissues are hypotonic and less resistant. Tissues and cells which in health are capable of withstanding infection now are the prey of bacteria, which under normal conditions they could combat. If children and invalids, nay, even healthy adults, are fed upon milk containing tubercle bacilli there is grave reason to believe that serious risk is run of tuberculosis infection. Fortunately the number of cows suffering from tuberculosis of the udder is not great—possibly 4 per cent. is an excessive estimate—but still a cow with tuberculosis of the udder is a serious menace to the public health.

Dogs and cats both suffer from tuberculosis, and the presence of a tuberculous dog or cat in a house is positively dangerous. They are especially the playmates of children, and have the run of the house. They cough, and frequently put from the mouth their expectorate, which is virulent, and, needless to say, contaminates

anything with which it comes in contact. Many cases of tuberculosis in dogs and cats are of undoubted human origin, and this fact is all the more serious if we hold that the human bacillus is more infective to man than that from the ox. I am a strong supporter of the belief that tuberculosis, whether of the thoracic or abdominal viscera, is of intestinal origin.

I could detail to you numerous experiments and *post-mortem* records in which the process of infection is as plain as the sun at noonday, but, as in other cases, the *via* of infection has been hitherto ignored in the presence of the major lesions. Because gross lesions are observed in the lungs, therefore, it has been maintained, infection has occurred along the respiratory tract. Yet experiments made by causing animals to breathe an atmosphere loaded with tubercle bacilli, containing many times more tubercle bacilli than is ever possible in Nature, have failed to produce serious lung lesions.

In glanders, a particularly virulent disease of the horse communicable to man, it was believed until recently that the disease originated in the respiratory tract by inhalation of the virus. Now, however, we know that the lesions in the lungs follow ingestion of glanders bacilli. If you give a horse a piece of carrot containing a culture of glanders bacilli, giving the carrot as you would an ordinary bolus, lesions of glanders will develop in the lungs, and may be demonstrated in a fortnight. These experiments with glanders bacilli have demonstrated further the wisdom of local authorities who forbid the use of water troughs during the prevalence of an outbreak of glanders. And so in tuberculosis—the lesions in the lung arise from the presence of tubercle bacilli brought to the lungs from the intestine. Experiments, and, as I have said, the *post-mortem* records, show that in tuberculosis, save in those forms following inoculation and direct injection, infection occurs through the alimentary tract. If this is so, and there is little use of denying that evidence is strongly in favour of such a belief, what is to be done to protect man from infection coming from the domestic animals? There is only one answer, and that is, that the source of the food of man must be subjected to rigid inspection by men trained for the purpose and employed for the purpose. Cows kept for production of milk for large towns must be under veterinary supervision, and it should be incumbent upon the owner to report the illness of his cows, especially affections of the udder. It may be that powers may be required to enforce this inspection, and it might be difficult to examine cows many miles from the city supplied with milk, but powers can be obtained without much difficulty, and the second obstacle to complete inspection may be overcome either by employing local veterinary surgeons, or better still, utilising the services of professional men attached to some central authority. I hold, therefore, contrary to some, that tuberculosis in man may arise from the ingestion of foods containing tubercle bacilli of animal, as distinct from human origin. In any scheme for the suppression of tuberculosis the origin of flesh and milk intended for human consumption must be carefully enquired into. It should be made impossible for either flesh or milk contaminated with tuberculosis virus to be offered for sale. Naturally, the question arises, how may this be done? It may be attained by systematic inspection by qualified veterinary surgeons of animals intended for food or producing milk. In the United Kingdom inspection is by no

means universal. Dublin is the only city in Ireland which has a veterinary surgeon upon its staff giving all his time to the services of the Corporation. A few cities, as Manchester, Sheffield, Hull, London, Glasgow, and Edinburgh, in Great Britain have the services of veterinary surgeons, but the great majority of towns have either no inspection, or, what is worse, a mere apology for inspection by a layman with no training in this most important function. Inspection to be satisfactory must be done by a fully qualified man, and in a situation where there is no loss of time in going round the material to be inspected. Private slaughter-houses should be abolished as soon as practicable, and no new licences should be granted. Every facility should be given to butchers to use Corporation abattoirs, and minimum charges made to attract them. Animals intended for food should be inspected before and after death. Inspection of the viscera should be done in every case. A system of marking flesh should be adopted, so that the purchaser may know that it has been under the eye of the inspector. Different marks may be utilised to signify different qualities of meat. Some flesh it may be necessary to sterilise, and arrangements should be made at the abattoir, or adjacent thereto, for such sterilisation. This flesh after treatment could be sold cheap, which is certainly preferable to condemnation of flesh perfectly wholesome, but perhaps not marketable. The inspection, both living or dead, must be in the hands of a veterinary surgeon. The other arrangements may be in the hands of laymen attached to the staff of the abattoir. If inspection were carried out along the lines I have indicated, there would be little or no risk of tuberculosis infection from flesh.

And now as to milk. In only a few cities are many cows kept. Milk, as a rule, is brought in from a distance, and this fact increases the difficulty of a thorough and efficient inspection. In the city the cows should be examined periodically by the city veterinary inspector, who should have access to the cow stables at all reasonable times. He should have the power to take samples of milk for bacteriological examination, to examine a suspected cow in any manner he thinks fit, as, say, apply the tuberculin test, and he should be empowered to remove any cow he thinks diseased. As to milk coming in from the country, it should be received at some central station, where samples would be taken for examination. The drawback to this method is that examination of milk to detect the tubercle bacillus is one of time, and days or weeks might elapse before a certain supply could be marked down as dangerous. A better method, and a supplement to the central receiving station, is to require every dairyman to be licensed, and that all his cows be registered, and that the cows be regularly inspected by a qualified veterinary surgeon. It should be made incumbent upon an owner of cows providing milk for the market that he notify any disease in the herd, and also any ailment among his assistants. Milk is a perfect food not only for man and animals, but also for bacteria. It is readily contaminated, and becoming contaminated may be the medium for extensive outbreaks of disease. It has been the fashion in the past to blame the cow for suffering from diseases which certainly do not afflict her. She has been blamed for spreading scarlet fever and typhoid fever. But there is no disease in cattle resembling either one or the other. The milk had been contaminated from a human source. Diph-

theria is not a disease of the cow, though it may be inoculated into her as into a guinea-pig. If her udder is infected, as it may be by a milker who has been in contact with a person suffering from diphtheria, or who may be suffering from the disease himself, she may give milk capable of setting up diphtheria in susceptible persons. It is, therefore, very necessary that herds of cows providing milk for human consumption should be examined periodically by persons cognisant of disease, and as much for the owners of herds as for the consumers of milk. A veterinary sanitary service is necessary to assist the medical officers of towns and cities, and I have reason to know that such a service would be appreciated by those in charge of the health of our large towns and cities. And now, though my subject is far from exhausted, I must draw my remarks to a close, but before doing so I have a few words to say in the form of advice.

You are now entering upon your studies to qualify for a noble profession. Your work in the future will consist in ameliorating suffering among the lower animals and in preventing the spread of disease not only among the lower animals, but from them to man. In the future there will be demands for your assistance from the colonies and dependencies of the Empire; you must fit yourself for the call by taking full advantage of the teaching offered to you. You must always remember that nothing succeeds like success, and that to be successful you must work. You come here to work. You are not wanted if you will not work. If you have come to Dublin for pleasure and enjoyment, there is no need for you to join the Veterinary College with the delusion that that is all that is necessary to eventually obtain the diploma. You have come to College to learn the principles of your profession, and I would have you remember that first and foremost. There is plenty of time for pleasure after your professional examinations, when you have come triumphantly through the ordeal. But in preparation for that triumph I cannot advise you better than to ask you to do your duty to yourself, your people, your College, and your country. Strike an ideal, and endeavour manfully to attain it.

Mr. M. Hedley, F.R.C.V.S., in proposing a vote of thanks to Professor Mettam for his interesting and instructive paper, said he had chosen a subject which had been exercising the minds, not only of medical men and veterinary surgeons, but also of philanthropists and legislatures both at home and abroad. It has engaged the attention of several congresses in the past, as it would also do that of others in the time to come, and probably not one of them there that day would live to see the time when tuberculosis would be wiped out of the land. Still that was no reason why they should not do their best to help in eradicating it, because it was a duty which devolved upon them and their College, as well as upon every other veterinary college in the world. He hoped the time would also come when there would not be a corporation or local council in Ireland which would not have its veterinary surgeon to safeguard and protect the public against this disease, and every other one which might be scheduled in the time to come.

Colonel Hazleton, P.V.O., in seconding the vote of thanks, said it was unnecessary to point out the importance of the points dwelt upon with reference to the prevention of disease. No doubt when all the disease in the world was stamped out there would not be anything left for doctors and veterinary surgeons to do, but that time was yet a long

way off, and he was afraid the students of that College would not see it.

Sir Christopher Nixon, Bart., said that before formally putting the vote of thanks to the Principal for his address, he desired on the part of the Governors to offer their warmest congratulations to the students who had obtained distinctions. He thoroughly endorsed all the Principal had said as to the all-importance of constant work. Nothing good was to be gained in this world except by honest, continuous work, and this was made all the more necessary now on account of the keen competition in professional life. As to the Principal's address, it was in his opinion just the type of discourse which he was pleased to hear delivered in that College. It was eminently practical in its way, and no subject could be chosen more fruitful than that one which had rivetted the attention of the whole civilised world in the effort to try and lessen, if they could not stamp out, the greatest plague to man, viz., tuberculosis.

In a very interesting report which was furnished lately to the Local Government Board by Professor McWeeney, he contrasted in a very interesting way the two systems of tuberculosis treatment adopted respectively in France and Germany. In Germany the chief attention was directed to the cure of the disease, and the treatment of those who were affected by it, whilst in France, on the other hand, the absorbing attention of the State and the persons it employed was directed to those who had a predisposition towards the disease, and warning them how they might prevent its spread. Judging between the two systems, it certainly seemed to him that much more could be said in favour of the prophylactic system of the French doctors than for the German method. Professor Mettam in his address, however, went further still, and urged what must appeal to their common intelligence, that if they were to limit, and ultimately to prevent, tuberculosis, they must go further than man as a means for the spread of the disease, and they must deal with the condition of the lower animals and those diseases affecting them which were capable of being transmitted to man. Those remarks of Professor Mettam with reference to the study of tuberculosis amongst the lower vertebrates were, therefore, entitled to the most careful consideration. His report on the progress of the College was also extremely satisfactory. It was a great source of pleasure to him as President of the Board of Governors of the College to realise what progress the institution had made within the six years of its existence. He had pleasure also in acknowledging the fact that that success was largely due to their professors, who, from the Principal down to the junior lecturer, were as capable of imparting instruction in the veterinary profession as any body of professors in the world. Under conditions which were not remarkably remunerative they had done their work with an amount of enthusiasm which he never saw equalled, and he sincerely trusted they would inoculate the students, one and all, with a very virulent form of the same enthusiasm, and enable them to do their work in the same complete and thorough manner. While recognising the work done by the professors, there was unfortunately an obverse side to the picture. It was to be regretted that now, at the close of their sixth year, the State, which had provided a certain number of the buildings that were absolutely requisite, seemed now to hesitate in completing the College. It

seemed to him an impossible position that, having got a certain modicum of endowment from the State, it should now tell them it had no further means at its disposal to complete their buildings and properly equip them, and that they must look to some other source for funds. The Governors had no funds at their disposal. They were perfectly willing to give their time and services, but surely an institution like that, which was so pregnant with usefulness, not merely in the education of veterinary practitioners, but in the study of those problems which were so constantly arising in an agricultural country and affecting the welfare of their cattle industry, and which had been so prosperous and thriving in the short period of its existence, should not be one as to which the State should hesitate as to giving facilities not only for completing the education of its students, but also for undertaking research work of the greatest importance to the welfare of the country. In connection with that he would like to point out that quite apart from the education of students for professional purposes the College has also done important work for the Department of Agriculture. For instance, here was a list of work they had accomplished: "Investigations into the pathology of glanders, and the mode of its spread; epizootic lymphangitis; necrosis in lambs and calves of a bacillary origin; calf mortality (a special research work undertaken by the late Professor Nocard in conjunction with Professor Mettam); disease among sheep in the Dublin mountains; fowl and calf diphtheria; Wexford calf disease; contagious diseases among cows; hæmoglobinuria in cattle; tuberculosis and other diseases amongst fowl. That represented a valuable amount of work done by the College in the agricultural interest of the country generally, and it would be little short of a calamity if that College, having made such progress in such a short space of time, was now to be cramped and hampered in its efforts, not merely as a teaching institution, but with reference to research work of a most important character in connection with the agricultural interest of the country. When they were now about to herald the dawn of coming prosperity in Ireland, when industrial progress was making a beginning in various directions, and when they had the State directing its attention, not merely to questions in connection with land values, but to matters relating to railways and canals, surely institutions like theirs, which, in all other countries in Europe occupied such a close relation to agricultural progress, should receive from the State that amount of support which its usefulness entitled it to and demanded. (Applause.)

(*Abstract from the Irish Times.*)

VETERINARY SCIENCE AND PUBLIC HEALTH.*

BY R. M. BUCHANAN, M.B., BACTERIOLOGIST TO THE CORPORATION OF GLASGOW.

WHEN your Principal did me the honour of asking me to address you to-day, he very kindly left me entire freedom in the choice of a subject, and it is perhaps natural, in view of the work in which I am engaged, that I should have found it in matters having common interest to the veterinary and medical professions.

* The Opening Address of the Glasgow Veterinary College, Winter Session, 1906.

In the great matter of the prevention of disease, the two professions fight the same battle and work for the same end. Disease is essentially the same morbid process in animals as in man; the same principles govern its prevention, and the same methods are employed in its diagnosis and treatment. This unity in the problem of disease has in recent years brought the two professions more closely together, and appears destined as time goes on to establish an interdependence undreamt of in the past.

Before going on to consider the relationship of veterinary science to preventive medicine or public health, however, the present crisis in the history of this college demands, it seems to me, earnest consideration and attention. There is a tide in the affairs of institutions as of men which must be taken at the flood to ensure continued success, and it is evident that a flood tide is sweeping over the scientific institutions of the country at the present time, carrying with it new ideals of study which have burst the bounds of old class rooms and old laboratories. This flowing tide is sweeping over the institutions of Glasgow, and our technical and agricultural colleges and the new laboratories at the University are a magnificent first fruit of the new order of things, and a splendid tribute to the new life which has entered into methods of scientific teaching and investigation. The veterinary college has not remained uninfluenced by these sweeping changes in neighbouring institutions, and a movement is already on foot which seeks to place the college on a basis of security for the future, in order that it may continue its useful work as a teaching centre independently of fluctuations in enrolment, and fulfil the higher functions also of providing accommodation and facilities for enabling its students and diplomats to pursue original lines of work. The phenomenal results already obtained in experimental medicine are a call to every school of medicine to follow in this line, for it is the work of the laboratories that has most powerfully influenced the progress of medical science. It is this work especially which has enlarged our knowledge of the functions of all the organs of the body.

In the month of September last the newspapers published an outline of administrative changes which had been in contemplation for some time in connection with this college. It was therein proposed to raise the college to the position of a public institution with the ultimate object of affiliation with the University, and the establishment of veterinary degrees comparable to those conferred on students of medicine.

As you are aware, the college has hitherto been conducted as a private institution, affiliated under Royal Sign Manual with the Royal College of Veterinary Surgeons. It is a noteworthy fact that the other veterinary colleges of the country—situated in Edinburgh and London—were likewise instituted, and for many years conducted as private institutions.

In view of the changes contemplated, one naturally turns to the past history of the college and its prospects for the future for justification of a departure from the old order of things, and I have especial pleasure in doing so, for the historical record of the college is one of which you may justly feel proud, and sheds honour on your revered principal, while the future of veterinary science is charged with so much to do and to learn that facilities for veterinary teaching and research are more needed in Glasgow than ever they were.

The history of your college centres round the strong individuality of the man who has charged himself with its successful conduct through forty-six years of strenuous work. In that time 2,956 students have passed through the college to take up their life work in every part of the world. Mr. MacCall, as he then was, came from Edinburgh in 1859, and became the pioneer of veterinary teaching in this city by founding a course of lectures on animal medicine and surgery. He gradually gathered around him a staff of lecturers, and during thirty-four years of unbroken progress the number of students increased from 6 to 143. Thereafter, that is, from the year 1895, various causes have contributed to a great reduction in the number of students—a reduction from which all the veterinary colleges have suffered alike. The chief cause at work was the extension of the curriculum of study from three to four years, and the advancement of the preliminary examination in general education to the same standard as that qualifying for admission to the medical classes. This falling off in students proved disastrous to the finances of the various veterinary schools of Scotland, and without pecuniary assistance rendered them no longer self-supporting. On the other hand, the improvement in the status of the veterinary student thus effected, and the extension of time in which to better qualify himself for his profession, could only be viewed as a great advance towards educational efficiency. The check on enrolment was such that the numbers steadily declined during the succeeding five years to fifty. However, there has been a steady increase until the number is again at 76, and it is interesting to learn that 60 or 70 per cent. of the students enrolled in the college at the present time hail from Glasgow and the surrounding counties.

Another factor in depriving the Glasgow college especially of a large number of students was the incorporation by Royal Charter in 1895 of a college in Dublin under the name of the Royal Veterinary College of Ireland. For this very legitimate and worthy purpose Parliament authorised the allocation of a lump sum of £15,000 as a grant in aid towards the cost of acquiring suitable college buildings and fittings, and since 1900 the majority of Irish students have naturally gone there for their education. Prior to this I understand that the majority of the veterinary students of Ireland found their way to Glasgow, a fact which carries with it striking testimony to the repute of the Glasgow College.

In considering the prospects of the college, one must take into account the other veterinary colleges of the country to see how it fares with them, and how they have come through these lean years. Of the two colleges in Edinburgh one showed great discrimination, flitted to Liverpool, that great centre of commercial and educational activity, and became affiliated with the Victoria University there. The other Edinburgh college was many years ago founded as a private institution by Professor William Dick. On his death he formed a trust and constituted the Lord Provost, Magistrates, and Council as trustees for the administration of its funds and its affairs. But two years ago it was considered advisable to widen the administrative body, and to form a Board of Administration which should include members drawn from other public bodies as well as the municipality. This has been done and ratified this year by an Act of Parliament. The result is, that Edinburgh has now its Royal Veterinary College affiliated with the

University, and administered by a Board representing the town, the University, the Dick Trust, the veterinary profession, and certain of the agricultural colleges. An endowment of £15,000 by a public-spirited citizen of Edinburgh, greatly facilitated these changes. These two veterinary colleges have thus become public institutions, and at the same time integral parts of the University in their respective cities, and have thus become eligible for a share in grants made by Parliament for educational purposes.

In respect to the Royal Veterinary College of London, which was also founded as a private institution, the Government have recently decided to give an annual grant of £800.

The Veterinary College of Glasgow is thus the only one in the country remaining in the position of a private institution, and so long as it remains in this position it cannot look to the State for support, although it has taken, and continues to take, a leading place in the education of veterinary surgeons for the British Empire. The college cannot be expected to maintain for years to come a struggle against conditions so unequal, and if it is to continue its useful work and keep its place amongst the colleges of the country, it must become a public institution with a Board of Governors who will not hesitate to assume the necessary responsibility.

A movement was made in the direction indicated some five years ago, when it was sought to amalgamate the college with the West of Scotland Agricultural College, and had this proved successful, Government aid would have been forthcoming from the money set apart for educational purposes in Scotland. With the present outlook, I am confident that no one can regret that the negotiations fell through. It is better that the college should be left to work out its own salvation untrammelled by administrative considerations other than its own.

To permit the extinction of an institution that has become so intimate a part of the corporate existence of Glasgow, and that has served the country so well for nearly half a century, would be a lasting disgrace to the community, and would place the young men of the West of Scotland at a great disadvantage.

Now I have no doubt whatever that the men of Glasgow will take care that this does not happen, and will see to it that your college is placed on a sound administrative and financial basis, and that the devoted labour of your principal and those who have worked with him through all these years in training men for public service will thus be fittingly recognised.

A body of governors representative of the best administrative talent of the West of Scotland would obtain for the college the State aid to which it is justly entitled as an educational institution, and secure such local support in the form of endowment as would provide for affiliation with the University, and the encouragement of higher veterinary education.

When one considers that diseases in the lower animals and in man are so much alike, and are so frequently intercommunicable, it is not a little remarkable that the two professions have stood so much aloof from one another in the past. Happily the introduction of anæsthetics, the adoption of antiseptic methods in surgery, and the discovery of the causes of infectious disorders, have brought the veterinarian very much into line with the physician in the practice of the healing art.

But there is yet another domain in which veterinary science and medical science are destined to come into very close and intimate relationship. I refer to the domain of public health. There can be no doubt that the part played by the veterinary surgeon in preventing the spread of disease from the lower animals to mankind, and in safeguarding a large part of the food supply of the community, is already of great importance, but as his services become more widely known and appreciated he will assuredly come to occupy a far more prominent position in public health administration than he does to-day.

Let us glance then briefly at some of the public health aspects of his work as they now exist, and as they promise to develop in the future.

Inspection of Milch Cows.

The growth of our knowledge of milk and of its relation to health and disease has given rise to one of the greatest problems in the public health administration of the present day, namely, the problem of obtaining a pure and abundant milk supply.

The importance of milk in infant feeding and in the dietary of children and invalids, makes it imperative that public health authorities should assure themselves that its production and distribution take place under conditions of wholesomeness and cleanliness. There can be no doubt that the insanitary conditions under which milk is often produced and distributed explain the frequency with which it acts as a vehicle of infection in scarlet fever, diphtheria, typhoid fever, and diarrhœa. Its physical properties, moreover, are such as render it an ideal medium for the transmission and sometimes also the multiplication of the infective agent. But there is another possible source of infection, and it specially concerns us here, namely, disease in the animal supplying milk.

In view of these facts, there can be no doubt that the adoption of frequent and systematic inspection of dairy cattle and their surroundings by a competent veterinarian is of urgent importance in the interests of public health, and would ultimately be a source of profit to the producers and vendors of milk. It should be the duty of such inspection to insist on sanitary buildings, a pure water supply, healthy and well-groomed cows, and provision for the collection and storage of milk under methods of efficient cleanliness. At the present time a certain amount of inspection is carried on by veterinary surgeons, but it is limited to the search for tuberculosis of the udder or any other disease which may render the milk of the cows dangerous or injurious to health. Such inspection is no doubt valuable in so far as it goes, but it is attended with so many legal difficulties and imperfections and so little uniformity of application that administratively it is little more than a dead letter. To such an *impasse* has the country been reduced by this legislation that there is in every great centre of population an urgent demand for such amendment of the laws as shall render them of uniform and practical utility for the whole country.

The legislation provided to ensure a pure milk supply is contained in a few ordinances applicable to the country generally, as the Dairies, Cowsheds, and Milk Shops Order, the Public Health Act, and the

Food and Drugs Act, and in special local Acts applicable to some of the larger towns. It may be said that there are provisions enabling local authorities to deal with the health of milch cows, and cleanliness in the production and distribution of milk. But the great defect is that every local authority is empowered by the Order to frame its own regulations, and thus fix its own standard. Thus only 71 per cent. of local authorities in Scotland have adopted dairy regulations under the Order, and 65 per cent. in England. At best the regulations lag behind our knowledge of all the diseased conditions of cows, which ought to preclude the use of their milk, and do not adequately provide against the spread of infection.

The limited scope of the present regulations and the need for their improvement are matters that very imtimately concern the Veterinary Surgeon, and point to important work in preventive medicine which he will be called upon sooner or later to undertake.

In addition to this work there is a large field for research in animal physiology bearing on the dietary and housing of cows in relation to milk production, which it is undoubtedly the province of the veterinarian to accomplish.

The abundant supply of this important article of diet must be considered as an essential factor in the prevention of that appalling wastage in infant life so largely due to unsuitable food. The steady growth of preventive medicine and sanitary administration during the last thirty years, has scarcely at all impressed itself on infantile mortality, and especially on the shocking infantile mortality of some of our large commercial centres. Of every 1,000 infants born and registered in Scotland during the ten years from 1891 to 1900, 128 died before the end of the first year. In England during the same period the corresponding figure was 153. It has been found that the infant mortality in England and Wales has actually increased in the first three months of life, while it has declined in the succeeding parts of the first year of life. It is during the first three months of life that the question of the feeding of infants is most pressing, and the necessity for an adequate supply of cows' milk, free from disease and sophistication, becomes of so much importance. It will undoubtedly be a part of your duty, therefore, in the near future to co-operate in public health administration in the direction indicated towards reducing the high rate of infantile mortality which continues to defy the efforts of sanitarians.

There are many other conditions concerning the production of milk affording legitimate grounds for the exercise of preventive measures on the part of a Veterinary Inspector, namely, conditions giving rise to objectionable colour, taste, odour, or consistency of milk, the use of improper food stuffs, and of medicines.

At the same time it is to be remembered that improvement of the laws will not accomplish everything. There is a large class of milk producers who do much more than the law requires of them from a high sense of duty to their customers and a keen regard to the well-being of their herds, but who derive no adequate return for their product over and above the man who pays the minimum of regard either to the laws of the country or of hygiene.

It is, desirable, then, that a farmer or a dairyman who is prepared to supply milk under conditions complying with the demands of the

Veterinarian and the Sanitarian, should receive a certificate to that effect and a consequently higher price for his product.

Inspection of Meat.

Another field of work for the veterinary surgeon is in safeguarding the public health by inspection of our meat supplies. In this respect the legislature has provided very unequal facilities, for while meat inspection is very efficient in large centres of population such as Glasgow, it is notoriously defective in the country generally.

Great Britain is often referred to as "the cradle of hygiene" and while this is true, there are some respects in which public sanitation is still very defective and far behind other countries. The leading text-book on meat inspection in Germany, for instance, points out that this country is entirely without a regulated system of inspection. This is a sweeping statement, pardonable in a country pluming itself on the perfection of its own methods, but it is unfortunately in great part only too true, for, with the exception of a few cities and burghs, no regulated system is in force. That being so, let us look at the nature of the seizures in a city like Glasgow, where a very full and efficient measure of inspection is carried on in regard to animals slaughtered within the public abattoirs, and we shall get some idea of what may be passing into use for food in the country generally, where no systematic inspection exists or where there is no supervision whatever.

The Corporation Veterinary Surgeon's Report for 1893, shows that the total number of animals slaughtered in Moore Street Abattoir was 288,064. Of this number, 1,869 carcases were destroyed as unfit for human food on account of tuberculosis, 10 on account of pseudo-tuberculosis, 37 on account of malignant disease, 9 on account of anthrax, black quarter, pyæmia, and septicæmia, 84 on account of inflammatory affections, 3 on account of asphyxia, 382 on account of dropsy, 184 on account of injury, and 405 on account of decomposition.

One of the essential conditions for the efficient inspection of meat is that the whole carcase, including the organs, should be submitted to the Inspector. The Law makes no provision for the fulfilment of this condition in relation to carcases arriving in a city from different parts of the country or which are imported from foreign countries, and in this respect there is urgent need for home and international legislation providing for reliable inspection at the place where the animal is slaughtered.

All this work of inspection is clearly the province of the Veterinary Surgeon, and where men other than veterinary surgeons are employed, they should be trained for the work, and certificated by the Veterinary Schools.

Tuberculosis.

There are many problems in veterinary medicine in relation to prevention for you to solve, and which find a parallel in human medicine. So inter-related are many of the diseases of man and the lower animals, that collaboration on the part of the physician and the veterinarian would be attended with the happiest results, as the past few years have clearly shown. Take, for example, the disease tubercu-

losis, that scourge alike of man and animals. In 1901 Koch startled the world by announcing his opinion that human tuberculosis differed from bovine and could not be transmitted to cattle, and further that man was in no danger of acquiring tuberculosis from the use of milk, butter and meat. The important bearing of this pronouncement on public health led the Government to appoint a Royal Commission to investigate the relations between tubercle in man and animals. The results so far of this Commission's labours have appeared in a brief interim Report issued in 1904, in which the Commissioners set forth an opinion opposed to that of Koch, namely, that tuberculosis of human origin can give rise to bovine tuberculosis. On the other hand, investigations by a Commission of the Imperial Board of Health in Germany appeared to confirm Koch's view, and to maintain that the *Bacillus tuberculosis humanus* differs from the *Bacillus tuberculosis bovinus* in its form, its mode of growth, and its disease-producing properties. They found that cattle inoculated with the bovine type at once contracted general tuberculosis, whilst those inoculated with the human type remained in good general health, or suffered temporarily only from the localised effect of the introduction of the germ. The Report by Hamilton and Young of Aberdeen, issued about the same time, lent support to that of the British Royal Commission. More recently it has been found from experiments carried out by Professor Eber in the Veterinary Institute of Berlin, that material from tubercular mesenteric glands of children in 5 out of 7 cases produced typical tuberculosis in calves.

As regards the second part of Koch's pronouncement, that there is no danger from partaking of tubercular milk or meat, Professor Eber mentions that 67 cases of human tuberculosis showed 11, or 16·4 per cent., in which the bovine bacillus was present either alone (9 cases) or mixed with the human bacillus (2 cases). This is largely confirmed by the German Commission, who found the bovine type of bacillus in 6 out of 56 cases of human tuberculosis, and all the 6 were likewise cases of primary tuberculosis of the mesenteric glands of children. While the reports of work on this subject are as yet to some extent conflicting, they carry with them, at any rate, refutation of Koch's position, and bring us back again face to face with the fact that bovine tuberculosis is communicable to man.

The whole trend of experience and experiments is tending again to the belief that the bacillus of human tuberculosis and the bacillus of bovine tuberculosis are from the same parent stock, that their differences are the result of prolonged growth under the different conditions which pertain to the human and bovine environment.

The *Bacillus humanus* flourishes under exactly the same conditions as the *Bacillus bovinus*, namely, under conditions of overcrowding, or confinement, impure air, absence of sunlight, or other devitalising agency, and the veterinarian is confronted with exactly the same problem as the physician in the extermination of the disease. To attain this end both must be put in possession of the means of learning where and to what extent the disease exists; in other words, the first step in the prevention of this disease, whether in animals or in man, is a system of notification. This would imply the development, in regard to the animal health of the country, of a system of preventive medicine comparable in many respects to the Public Health Act. It

would further entail a much needed codification of all the laws of the country relating to animals.

It would appear that the enormous annual loss of human and animal life from preventable diseases is less a matter of indifference than a want of knowledge, and it appears to me that an institution such as this would be fulfilling a high function in equipping men in a special manner to take their place in the public health administration of the country more with the idea of helpful supervision than as inspectors exercising a police supervision with its pains and penalties.

There is no scientific knowledge relating to agriculture which is so eagerly demanded as hygienic instruction bearing on the feeding, rearing and housing of stock. And this leads me to congratulate you on the unequalled facilities for veterinary study and research which Glasgow as a centre occupies. You have public abattoirs and knackeries in which you may see almost every manifestation of disease.

The Future of Veterinary Science and Teaching.

Turning now to the future of veterinary science, and by implication, the future of its relation to public health, one is at once struck by the country's demand for more men equipped for the practise of veterinary surgery. The country is demanding also men for the higher branches of veterinary work, and undoubtedly a University degree would be an excellent means of conferring upon such men a hall-mark. University authorities all over the country have begun to appreciate the fact that veterinary science is a great department of knowledge to be cultivated as a science and promoted as an art. All this means increased teaching facilities and laboratory accommodation and equipment.

In regard to the field for clinical work, it has occurred to me that, great as this is, there is need for an isolation hospital in which animals, horses, cattle, dogs, sheep, birds, rabbits, and even rats and mice, might not only be subjected to treatment, but kept under observation to permit of the course of the respective diseases being followed from beginning to end. The question of free hospitals and dispensaries for the animals of the poor is one which I think calls for some consideration. I consider that the experimental farm is a necessary adjunct to a veterinary school, where the physiology of animal life, in other words, healthy functions, may be studied, apart from disease.

Specialism.—In human medicine nothing has contributed so much to emancipate its practice from routine and dogma as the restriction of men's energies to special branches of practice, in other words, specialism. The conditions of veterinary practice may be such that they do not lend themselves to specialism. At any rate, veterinary practice has not as yet been broken up into specialities as in human medicine, and there is no fear that in the immediate future, at least, your sphere of practice will become restricted by specialists. At the same time, there is, it seems to me, a great field for specialism in study. I am confident that if one were to direct his energies to one class of diseases, or the diseases of a special system, he would derive an infinitude of pleasure and benefit to himself and if he did not gain additional kudos as a practitioner, he would at least contribute to the sum of know-

ledge. For example, if a man made himself an authority on a disease like anthrax, his knowledge would be a great asset to the nation—for although we know much about anthrax, there is still much to learn and correlate as to its symptoms and treatment in different animals, and much darkness to dispel as to the source and spread of the infective agent. In like manner the nervous diseases of animals might be mentioned as affording practically a virgin soil to cultivate. Take, for example, the malady known as stringhalt. I read in a journal a few days ago that a veterinary surgeon who had devoted special study to the subject announced that in horses, not to speak of oxen and dogs, six forms of chronic stringhalt may be recognised, some curable and others incurable. It is not clear to what extent the malady is of nervous origin or due to lesions in the bones and muscles, and therefore there is a large field for investigation in this apparently simple affection.

Post-Graduate Study.

In yet another respect the veterinary college is essential as a centre of post-graduate study, to which those engaged in veterinary practice would return from time to time to readjust the professional compass. In this way men will be enabled to keep abreast of the times in the practise of medicine and surgery, and in laboratory methods of diagnosis and investigation. There is nothing like post-graduate study for saving a man from self-sufficiency in his own professional knowledge and opinion, and from intolerance of methods outside his own limited experience.

Clinical Laboratory.

Before the advent of the bacteriological era the diagnosis of disease was chiefly accomplished by a consideration of symptoms and the results of treatment. But new life and vigour came into medicine and surgery with bacteriology, and one of the results is that the diagnosis of many diseases may now be made with perfect accuracy from the examination of the morbid products of these diseases in a laboratory. One of the most useful applications of bacteriology is this, as an aid in diagnosis. We no longer hazard our opinion in diagnosis, we call to our aid the resources of the laboratory and reach a clear and precise finding. The time has come when veterinary science might make use of the laboratory methods of diagnosis that have developed in recent times and become recognised as an essential part of every-day practice. In this college the development of such a department of work would, I think, be a legitimate and valuable extension of its usefulness.

In conclusion, I would express the hope that your esteemed Principal—the grand old man of veterinary science—will find his life-long labour in the cause of veterinary science crowned by the establishment of a school of veterinary medicine which shall not only serve local claims and aspirations, but shall take a foremost place among the colleges of this country, and rank side by side with the great veterinary schools of Germany and France by virtue of good work well done. And I congratulate you on the choice of a profession abounding in so much of interest, and in having before you a field of work abounding in so many problems, the solution of which is destined to confer so much lasting good on humanity as well as on the humbler creation.

Clinical Articles.

SUBCUTANEOUS EMPHYSEMA IN A MARE.

BY HENRY TAYLOR, F.R.C.V.S., HAYWARD'S HEATH, SUSSEX.

A MARE of my own met with an accident, in the course of which a shaft penetrated the tissues immediately internal to the olecranon process and passed to a depth of at least nine inches. The direction of the injury was from just inside the olecranon process upwards and forwards, the shaft having thus passed into the tissues which lie between the fore limb and the thorax. The wound was scarcely visible when the animal was standing naturally, but was evident when the leg, *i.e.*, the left, was drawn forward. There was little or no bleeding, and after the accident the mare had walked home, a distance of about half a mile. Curiously enough, also, the animal after the first day or two was hardly lame. As the wound appeared closed when the mare was standing, emphysema was not apprehended, and therefore the orifice was not plugged. One day a little emphysema was noticed about the region of the caput muscles, and next morning she was, practically speaking, emphysematous from her head to her tail. It started just behind the ears, and extended down the neck, along the sides and back, and under the abdomen. The crests of the ilia seemed to have offered a slight barrier, for the quarters were not quite so bad as the rest of the body. Touching the body was like touching an air cushion.

The mare did not seem distressed, so the only treatment adopted was plugging the wound with cotton wool, and keeping her quiet. As long as the animal did not seem to be upset with the condition, it was not deemed necessary to puncture the skin. About a week or ten days elapsed before the air disappeared, the last to go being that under the abdomen. A curious point about the case was the extent and degree of the emphysema, together with the absence of constitutional symptoms.

INVAGINATION OF THE CAPUT CÆCUM COLI IN A PONY.

BY CLEMENT ELPHICK, M.R.C.V.S., NEWCASTLE-ON-TYNE.

THE subject of this interesting *post-mortem* lesion was an aged Russian pony, which had been recently imported.

I was called in to see this pony on the afternoon of Tuesday, July 24, the messenger stating that "a pony had colic, and my presence was urgently needed." Upon my arrival I found pony down in the stall, lying fairly quiet. I did not disturb him there and then, but applied in the meantime the usual means to obtain a history of the illness. The owner said that upon his arrival in the stable in the early morning the pony seemed to be "off colour," and uneasy; he watched him for some time, and came to the conclusion that the pony had been griped, but was getting better. About three hours after his first visit he found the pony to be decidedly worse, and immediately gave the animal a colic

drink; this eased him for a time, but the pony became worse, and I was asked to come at once and see him.

I now made a thorough examination of the pony. I found the pulse quick and wiry; respirations increased in number and deepened; temperature normal; mucous membranes deeply injected.

Upon auscultation all the usual bowel sounds were in abeyance. Made a rectal examination—the pony making determined efforts to expel my arm—bowel empty and "ballooned," bladder distended. I gave several copious lukewarm water injections, none being held more than a minute, and watched the patient for some time. The symptoms presented were a sudden attack of pain, accompanied by a paddling of all four feet; then the pony would drop as if shot, and start straining violently, the straining being very prolonged; during the attack flatus would be involuntarily expelled.

Invagination of the Cæcum.

The attacks lasted about four to six minutes, each being followed by a period of ease and comfort, the pony standing quiet, pricking the ears, and looking round for food—in fact, apparently quite recovered; then, without warning, he would drop to the ground and present symptoms as before.

I diagnosed a stoppage of the large bowel, and treated accordingly. The pony remained ill for forty-eight hours, and on the afternoon of the 26th a message was sent along, saying that the pony had had a large passage of fæces, and had stood perfectly quiet for an hour or more, and seemed quite well.

I told them to administer some bran and gruel together with half-pint of linseed oil, and that I would be along at 9 p.m. At 8 p.m. the

owner called to say that he thought there was no need for me to go and see the pony, as it was quite well, and needed no further attention.

Next morning I happened to be passing in the neighbourhood, so I called in to see how my patient was progressing; I found him "going out with the tide," another attack having come on at 6 a.m. that morning. Pony died five minutes after I arrived. I made a *post mortem* the same day.

I found that the apex of the cæcum was invaginated into the body of the cæcum, the portion invaginated being strangulated, and the blood-vessels were very much enlarged and hardened. The photograph shows exceedingly well the position of the invaginated part, which measured, from the apex to the base of the invagination, nine and a half inches.

The wall of the cæcum was cut open and laid back to show the state of affairs more clearly.

I have looked through most of our leading books on medicine to see if a similar condition has been recorded, but without success.

CARCINOMA OF THE VULVA OF A MARE.

BY JAS. MCKENNY, M.R.C.V.S., DUBLIN.

THE subject, a brown mare, aged 10, about 15 hands high, stoutly made on good short legs, had always worked well in a butcher's van. During the summer she was put out to grass for a few weeks in a field with a vicious horse, which kicked her and slightly tore the off-side of the vulva. The wound did not heal and she was sent to me on July 4 last. On examination I found the wound surrounded with granulations which completely covered the off-side of the vulva and the floor of the cavity. I cauterised it to remove the granulations with potassa caustica, and under this treatment it was apparently doing well for a time. The mare, however, became vicious, and the dressing could not be properly applied. The granulations did not increase until about September 10, or 12, when they commenced to grow rapidly. The mare was brought to me again on September 22, and the growth had so increased as to threaten to block the passage. I therefore removed it by operation, and believing I had to deal with a malignant growth I took it to the Royal Veterinary College of Ireland for examination by Professor Mettam, who, after cutting and staining sections, pronounced it to be carcinoma. The diagnosis was also confirmed by Professor Wooldridge.

DOUBLE-HEADED CALF MONSTROSITY.

BY G. H. WOOLDRIDGE, F.R.C.V.S., PROFESSOR IN THE ROYAL VETERINARY COLLEGE, DUBLIN.

ALTHOUGH double-headed monsters are not extremely rare, I venture to place the present case on record. The subject was forwarded to the College by Mr. Dobbin, M.R.C.V.S., of Waterford. It had been born the previous day and was still living when it arrived in Dublin,

although death occurred before it was delivered at the College. As is shown in the illustration the two heads are fused at the base; there are two noses and mouths, and four eyes, but the ears towards the median line are fused so that there are only three external ears. The head was articulated to the atlas, which was single, by what appeared to be a normal posterior aspect of an occipital bone with two condyles.

Examination was made to see if the larynx and œsophagus were also duplicated, but they were found to be single, and apparently normal, both opening from a single pharynx. The two buccal cavities opened posteriorly into the same single pharynx, but in each

A Double-headed Calf.

case both the soft and hard palates were widely cleft, so that the nasal and buccal cavities were continuous the whole way.

Even had the calf survived the tedious railway journey it would in all probability have died for want of nutriment, as suckling would have been impossible.

On removal of the skin and soft structures the bones themselves were examined. The occipital bone, as expected, was single, all others being duplicated. The basi-occiput was very broad and its anterior end articulated with two post-sphenoids. The supra-occiput was evidently fused with the interparietals. The petrous temporals were four in number, the two median ones being placed close together and corresponding with the median external ear.

I am indebted to Professor Mettam for the photograph.

TWO CASES OF FIBROUS ANCHYLOSIS OF THE KNEE JOINT.

BY CAPTAIN H. A. SULLIVAN, PRINCIPAL, ARMY VETERINARY SCHOOL, POONA, INDIA.

THE subject of this article was a thoroughbred English mare named Ladysmith II., who was imported to this country for racing purposes, and in trials had proved herself exceptionally fast, especially over four or five furlongs. She was an exceedingly excitable mare, and the frequent trials she took part in on her arrival in this country did not improve her in this respect. On one occasion she was being boxed from Poona to Jubbulpore for the races at the latter place, but she got very excited and ultimately threw herself down in the box and in this manner damaged her knees very severely. I did not make her acquaintance till nine months later, when both her knees were so stiff she could hardly bend them out of a straight line, and the owner wrote to me either to destroy her or hand her over to a Government Remount depôt for breeding purposes. He ultimately gave her to me on condition that I would not sell her and that I would destroy her when done with. My first intention was to use her for breeding purposes, but later I decided to try treatment for the knees, though they looked very hopeless and she had already been nine months under treatment without effect. To this end I put her under chloroform, and by means of traction, obtained by passing a rope from the fetlock through a collar on the neck, I broke down the adhesions thoroughly in one knee, leaving the other knee for a subsequent occasion. The next day the knee was enormously enlarged and very painful. This was well fomented and subsequently massaged twice daily with belladonna and glycerine, taking care to flex the knee to a certain extent each day. In the course of three weeks she could flex this knee to about an angle of 90°. She was then put down again and the other leg dealt with in a similar manner. In the course of two and a half months both legs could be easily flexed till the heels touched the elbows, and she was subsequently put into training.

A second case of fibrous anchylosis of the knee joint came under my notice a few months later. In this case the patient was a hunter belonging to the Master of the Poona foxhounds. The horse fell badly in a nullah whilst out hunting, sustaining a very severe injury to the near knee. The case was not brought to my notice till about three weeks after the accident, some amateurs having essayed to treat it in the first instance. When brought to me only very slight flexion was possible, and there was a great deal of inflammation present, and much swelling. In this case I devoted a whole month to relieving the inflammation present before attempting to break down the adhesions. After this I put the animal under chloroform and treated it precisely in the same way as the first case, with equally satisfactory results.

I am a great believer in massage for stiff joints, after breaking down adhesions, as I find that without it the joints are apt to become stiff again, and I think that inunction of belladonna and glycerine in these cases assists in removing the pain and stiffness incidental to the treatment.

EXTRACTS FROM A LAST CENTURY'S CLINICAL NOTE-BOOK.

BY THE LATE JOHN DUNSTAN, ST. MELLION, CORNWALL.

(*Continued from p.* 565.)

Amputation in a Cow.

1819. Mr. W. H. had a steer with a bad foot. Took out two bones from the pastern joint, as the joint was quite decayed, all the outside claws nearly off. Healed the wound with blue lotion and green basilicum. Cured.

Urethral Calculus.

1819. Mr. T. D. had a horse straining to make water. I gave him one ounce of Castile soap, two ounces of resin and one ounce of spirit of turpentine in a quart of beer, and took a stone from his urethra as large as a marble. He immediately made a quantity of water and went on all right.

A Case of Colic.

1819. Mr. J. C. had a horse took with a violent inflammation in his bowels. He swelled in the belly like a cask, wallowing and tumbling and not able to stand a minute. I bled him well and gave 8 ounces of salts, 1 ounce of pepper, and a pint of cold strained linseed oil, and half a noggin of spirits of turpentine. I then gave him a clister with salt and oil. He recovered very quickly.

Odd Notes.

1819. Mr. S. B. had a horse which when going into a gateway knocked off a piece of pin bone which fell down inside the skin and hung by a string. This happened August 25, and I cut through the skin and took out a piece of bone. I cut the bone smooth before the wound would heal. This was done on the 31st and the horse got cured.

1819. Mr. J. B. had a horse swelled very much over the kidneys and was in agonies of pain as if inflammation in the bowels. I bled well in the kidney vein and struck the flem all over the swelling and rubbed in spirits very strong, and gave a drench of the water. Cured.

1820. J. B., Esq., had a young horse swelled very much in the breast, I attended him and bled him, rowelling, and gave alterative medicine and physic different times.

The horse went hearty to his meals up to two days before he died. I attended him the first time on January 1, and he died on the 10th. I opened him and found the lungs quite rotten, the running ulcers in the chest working through from the lungs.

1820. Mr. B. W. had a yearling broke its leg between the hock and stifle joint. I first rubbed in spirits of wine and vinegar mixed together, then took a long bandage about 3 or 4 inches wide and put it round the leg, pitching it as I went on, then fitted splinters according to the case and bandaged round with rope-yarn and pitch, putting tow or wool at the ends of the splinters. Cured.

1820. A horse was brought to St. Mellion with a large bladder under his tongue. Cut off all the bladder and rubbed with salt. The following day there was a bladder under the tongue on the other side. I cut out like the last and washed the mouth with vinegar and alum and gave gruel. All right.

AN INTERESTING COMPLICATED CASE.

BY R. MACGREGOR, M.R.C.V.S., MARKET HARBOROUGH.

On January 25 I was called in to see a hunter with a swollen and painful *near-hind* leg. The condition was manifestly lymphangitis, and I gave a dose of physic and ordered hot fomentations, followed by light exercise. For ten days the case went on well and the swelling subsided, except in the region between the stifle and hock. I then gave potassium iodide without any good results, so I substituted iodide of iron, still without any apparent beneficial effect. The swelling continued large and tense, and more or less painful. By this time I began to suspect a deep-seated abscess, but could find no pointing or soft place. About a month after first observation, Mr. T. Spencer, of Kettering, consulted with me over the case, and we found a more or less soft place on the external surface of the leg, from which a serous liquid was exuding. I inserted a Symes abscess knife into it, but no pus appeared. I made the wound larger and deeper and still no pus came, but plenty of blood. I then put my hand into the wound and broke down tissue with my fingers in the direction of the front of the Gastrocnemius, where it appeared softest. At last my efforts were rewarded, and a large quantity of dirty-looking stinking pus exuded, leaving a great cavity and exposing the tibia. I irrigated the cavity with antiseptics and gave quinine, and the next day the horse walked fairly well. On the following day, February 24th, the horse became dead lame in the *off hind*, slinging the leg, and in very great pain. On examining the foot I observed descent of the os pedis, and the sole yielding to pressure. On thinning and puncturing the sole it was found to be under-run with pus. The pus was removed as far as possible and antiseptic foot-baths prescribed. After a few days, however, the hoof began to separate at the coronet. The owner then agreed with me that slaughter was advisable, and the animal was shot.

Original Articles.

THE SPREAD OF ANTHRAX IN ANIMALS AND MAN.*

BY JOHN DUNSTAN, M.R.C.V.S., F.R.S.EDIN.

One of the chief reasons of the importance of anthrax is its communicability to man, the actual pecuniary loss from deaths of animals not being great in this country in comparison with other contagious diseases of animals. This loss, however, though small, is increasing almost regularly every year owing to more frequent occurrence of the disease. The Board of Agriculture statistics tell us that the average yearly deaths from anthrax in animals for the years 1887-9 were 194, and for the years 1903-5, 924, *i.e.*, nearly four and a half times as many cases occurred during the last three years. Not too much reliance should be placed on statistics, however, for various reasons; among them the following:—

* A paper read before the Royal Sanitary Congress.

(1) Unwillingness of the local authorities to report, on account of the expense incurred in disposal of carcases. This condition of affairs exists both in England and Scotland.

(2) Landowners frequently object to their tenants reporting cases of anthrax, as the value of a farm on which anthrax is known to exist is thereby depreciated. Small landowners farming their own land frequently do not report for similar reasons.

(3) Stock-breeders and feeders often do not report for the reason that buyers are shy of buying from a farm on which anthrax has recently occurred.

(4) Dairy-farmers object from fear of being temporarily prohibited from selling milk.

(5) The occasional occurrence of atypical cases in which the disease is not suspected.

(6) Cases are no doubt occasionally returned as anthrax which are not really so, owing to the difficulty of diagnosis when some considerable time has elapsed between death and examination.

Anthrax in Man is generally the result of infection from an infected animal or some part of its body or appendages, but it is necessary to recognise the possible saprophytic behaviour of the bacillus, and that it may be conveyed by soil, water, flies, dust, &c. Man possesses a greater degree of resistance than most of the domesticated animals, and in him the disease runs a longer course. There are three chief methods of infection: by inhalation, ingestion and inoculation. Perhaps errors in diagnosis are quite as frequently made in man as in animals, even if not more so; errors being particularly likely to occur in ingestion cases, especially in districts where the disease is infrequent.

Infection by Inhalation is popularly known as wool sorters' or rag pickers' disease. These cases are not so frequent as formerly, owing to improved methods of dealing with wools, &c.

The condition is not easy of diagnosis unless the history points to the possibility of anthrax, and for this reason diagnosis is occasionally made too late. Dr. Bell, of Bradford, says: "Even when examined with great care diagnosis is frequently extremely difficult and well nigh impossible before the heart fails and collapse threatens. In ordinary cases where the patient survives from three to five days the symptoms for the first few days are so slight and so closely resemble those of ordinary catarrh, that I do not know how a correct diagnosis can be made." In other cases heart failure is manifest at the commencement and diagnosis easy. The characteristic symptoms are: difficulty of breathing, cough, cyanosis, sense of constriction of the chest. Respirations 30-40, pulse 120-180. Temperature 104-106° F. Frothy, bloody expectorate containing bacilli, and death usually in from twenty-four to forty-eight hours.

Inoculation.—The lesion which results from infection by this method is popularly known as "malignant pustule." There is no danger of inoculation if the skin be sound, but even a pin or thistle prick is sufficient to afford entry to the bacilli. An itching pimple with a dark areola first appears, the dark centre is soon covered by a small vesicle, the contents of which are at first clear, but later bloody. The vesicle dries up in one or two days and becomes firm and hard and suggests gangrene. The swelling extends from a half to three-quarters of an

inch, and a row of new vesicles appears, followed by a necrotic slough, the lesion gradually extending in this manner. The necrotic part remains firmly adherent to the subjacent tissues until suppuration, which takes place in favourable cases, ensues. In addition to these local manifestations, fever, with its accompanying symptoms, is always present.

Anthrax Œdema may result from direct inoculation or in the course of internal anthrax; a flat swelling occurs which extends rapidly, with a yellowish or reddish discolouration; it tends to speedy general infection.

Ingestion (*intestinal anthrax*).—The history of ingestion of anthrax products assists diagnosis. Possibly for some days there may be indications of local bowel lesions, chills, fever, nausea, &c. Suddenly the following occur—vomiting, bloody diarrhœa, anxiety, debility, cyanosis, and may be petechiæ, convulsions, nervous symptoms and collapse.

The bacilli are not always found in the circulating blood, but always in the sanguinary excretions.

Dr. Legge, H.M. Medical Factory Inspector, states that in this country during the five years 1899-1903, 211 cases of anthrax in human beings were reported, and that the death-rate was 20 per cent. The seats of infection were as follows:—Internal, 5; neck, 84; face and head, 77; forearm, 16; fingers, 1; elsewhere, 28. The pustule was excised in 143 cases, and the greatest death-rate occurred in those cases in which the primary lesion was situated on the neck, face and head; 72 of the infected persons were wool workers, 56 of these working on wools classed as dangerous, 58 were workers in horse-hair, and 69 workers in hides and skins.

Among the operatives working on wools scheduled as dangerous, 1·3 per cent were infected, and on dangerous hair 1·5 per cent; 34 per cent. of reported cases occurred amongst workers in Persian wools, 22 per cent. Turkish and Mohair, 28 per cent. Chinese horse-hair, 21 per cent. East Indian horse-hair.

Recovery may, in the majority of cases of human anthrax, be confidently looked forward to if treatment be adopted in time. Sclavo's serum is now used largely, and with excellent results.

Dr. Legge, in his Milroy lectures, says:—"Many cases of cutaneous anthrax recover spontaneously, more recover after excision, and still more if, in addition to excision, Sclavo's serum be used. The serum should be used in all cases of internal anthrax, and in all cases where persons exposed to possible infection are taken ill, unless anthrax can be positively excluded. Forty cc. of the serum should be given, and repeated if necessary."

Notification of anthrax.—The law directs that all cases of anthrax in animals shall be reported, but not so anthrax in man. Under the Factory and Workshops' Act, 1901, all cases of "industrial" anthrax have to be notified. This is not as it should be, *all* cases should be reported. Numerous cases are on record where factory workers have conveyed the disease to friends and relations by means of their clothes, &c. If a wool or skin worker contracts anthrax, it is notifiable. If, however, a member of his or her family becomes infected through his clothes it is not notifiable. A carter may convey infected wool or hides to a factory and contract anthrax from handling the goods; this case is, however, not

notifiable, and the wool or hides go unsuspected to probably infect others, and the vehicle perhaps to convey grain or other food materials. Neither the Home Office nor the local authority has power to deal either with cargo or wagon. The Home Office is now issuing to all establishments dealing in raw materials an illustrated placard prepared by Dr. Legge. On the top are three pictures depicting a malignant pustule of: (*a*) one or two days; (*b*) three or four days; (*c*) later development. Below is a clear description of the disease, symptoms, causes, means of prevention, and treatment.

Disinfection.—This in the case of animal products is by no means an easy matter. It is not practicable by means of chemicals, and heat sufficient to destroy the bacilli is only applicable in the case of horse-hair. The hair is subjected to a current of steam between 200° F. and 225° F. at 2 to 2½ lbs. pressure. In the case of other materials close-fitting washable dresses, with gloves, veils and respirators, are useful, as indicated in the particular methods, and appliances for the prevention of dust, or for the collection and destruction of dust, and manipulation as far as possible of materials in a wet condition.

This brings us now to a consideration of what might be done to lessen the frequency of anthrax both in man and animals.

First, then, we would say, compulsory notification of *all* cases of anthrax in man.

All cases in animals are reported, or at least are supposed to be reported. There is a widespread popular idea that anthrax only affects cattle. It is probable, however, that many animals of other species die of it, the cause of death being unsuspected.

Then some special means of dealing with those animal products which may be classed as dangerous should be compulsory. All cases of sudden death in animals should be reported, unless it is quite certain that anthrax is not the cause of death. All suspected cases should be reported directly to the Veterinary Inspector by telegraph. I have known numerous cases where an animal has been found dead early in the morning and the farmer has reported to the village constable fairly promptly. The latter then gets into his uniform and starts off to walk to the nearest Police inspector who may perhaps live six or eight miles away, and this in spite of the fact that there is a telegraph office in the village (if he sends a telegram he must do it at his own expense). The Police inspector then either reports to his superintendent or to the Veterinary Inspector, so that by the time the latter receives his notification evening has often arrived, and with it, in winter, darkness, which makes it impossible to dispose of the carcase on the day of death. This importance of *immediate* reporting I would lay special stress on, both on account of the much greater ease of diagnosis and of the great danger of leaving a carcase undisposed of longer than is absolutely necessary.

It is a wise proceeding of a veterinary inspector to take a field microscope with him when going to a suspected case. If he does this and also uses the single stain recommended by Sir John McFadyean, much valuable time will be saved and there will be less risk of error in diagnosis, and risk of spread of the disease by birds, flies, vermin, and dogs will be considerably minimised. The veterinary inspector occasionally meets with a case in which the animal has been dead for some time (I myself met with a case a short time since, in which

death had occurred three or four, probably five days previously). In these cases, especially in summer, putrefactive bacilli may swarm in the blood to such an extent, and those of anthrax have partially or wholly disappeared, or refuse to stain, that diagnosis is extremely difficult even in the hands of an expert. In these cases the carcase should be dealt with as if death were certainly due to anthrax ; in fact, the *Anthrax Order of* 1899 provides for the immediate disposal of such carcases as if certainly dead of anthrax.

There is reason to believe that animals dead of anthrax are frequently sent to knackeries, and the flesh is consigned to London as "cat's meat," either partially cooked or raw. Some means should be taken to prevent the possibility of this, as the vans in which such meat is conveyed may infect other goods, apart from the infective nature of the material itself. With regard to the disposal of carcases I have carefully studied the method of Major Bostock, now advised by the Board of Agriculture, and can speak of it in terms of unqualified approval, having now watched the destruction of several carcases. No attention is required after the fire has been set alight, everything is consumed, and there is not the slightest possibility of any infection remaining. It is not expensive, the cost being very little more than that of burial.

CLAIM AGAINST A FARRIER.

At Clerkenwell County Court, on Thursday, October 11, before his Honour, Judge Edge, Alfred Lines, farrier, of Arthur Mews, Caledonian Road, Islington, N., sued Messrs. Francis and Son, coal merchants, of Pitfield Street, Hoxton, for £13, in respect of shoeing work done. Mr. Barrett was counsel for plaintiff, and Mr. Gutteridge for defendant.

The claim was not disputed, but defendants filed a counterclaim for £13 odd, as loss sustained through alleged negligence on the part of plaintiff or his servant.

Mr. Gutteridge, in opening upon the counterclaim, said plaintiff had done shoeing work for his clients for some years. A horse, taken to him for shoeing on November 20, became lame. It was returned to plaintiff on the following day. His man took off the shoe and said there was nothing wrong. The horse was sent out to work, but as the result of a veterinary surgeon's examination it was put on the sick list. It was found that a nail had entered one of the hoofs and caused it to fester. Defendants sustained the loss of services of this horse for fifty-eight days, for which they claimed 7s. per day. They also claimed £6 8s. as wages paid to a man for attending and poulticing the horse. He might mention that since the action was brought the horse had had to be killed.

The Judge: As a result of these alleged injuries, do you say?

Mr. Gutteridge: No, I don't think I can say that. I have made no claim in respect of its death.

James Francis, a member of the defendant firm, said they purchased the horse in 1898 for £42. It was always a good working

horse. Witness went on to support counsel's statement as to what happened after the horse was sent to plaintiffs to be shod, and added that when the nail was drawn out he saw a discharge at the end of it, which denoted a fester. The horse was laid up until February 5; then it worked a little until March 28. It then went to stable and in April it was sent out to grass. Subsequently, on the advice of a veterinary surgeon, it was destroyed.

Mr. Barrett: Did your father tell you that Mr. Lines had pointed out to him that this horse had a weak and brittle foot?—I don't remember him saying so.

And that it was difficult to shoe?—I knew it was difficult to shoe.

And also that Mr. Lines said there was great risk in shoeing it, and that you must take the risk?—No, certainly not.

Had this horse, in addition to a weak and brittle foot, also a ringbone?—Not that I know.

Robert Lowe, the carter who took the horse to be shod, said that on returning it to plaintiff, his man put the shoe on again, saying he could find nothing the matter. But the animal had a difficulty in getting home, owing to the lameness.

Mr. Barrett: It was a job to shoe this horse?—Well, yes.

You had to go to the farrier's very often with it?—Yes.

How many times in a month?—I have been with it three times in a month.

Is it not a fact that it has been done in eight days?—Yes.

That is a very unusual thing?—Yes.

How long should a horse carry its shoe in working on the London streets?—He should carry it about three weeks or a month.

You knew it was difficult to get a shoe on this horse at all?—Yes, it was difficult.

Has plaintiff's foreman told you many times that it was difficult to shoe?—Yes. He told me it was a horse that required great care.

You knew that this horse had a large ringbone?—I did not notice one.

Has it not frequently happened that on the shoe being wrenched that the foot would break away?—It would break away.

Another workman, who attended the horse, said the discharge was on the top as well as underneath the hoof. It was a troublesome horse to attend to. When he took up its foot it would fall over on to him.

Henry Shaw, M.R.C.V.S., said that on being called in he tapped the nails of the hoof with a hammer, and on coming to the second inner nail the horse flinched. He took the shoe off, and in drawing the nail he saw there was a fester. He cut it out, and gave orders for it to be poulticed. He saw the horse again two days later and again cut it out.

Mr. Gutteridge: What would you attribute this to?—To the nail.

What happened to it when it recovered?—It was again shod.

Mr. Barrett: I want you to address yourself generally to the question of shoeing. Some horses have weak and some have strong feet?—Yes.

Counsel produced two specimens of feet and handed them to Mr. Shaw for examination. In one case, the witness said, there was plenty of horny substance, and the foot was not brittle, so there would

be no difficulty in shoeing the horse. The other one was a bad specimen of a broken foot, and the farrier would have to take great care in shoeing it.

Mr. Barrett: Will you explain the reason?

Witness: The outer wall has been several times broken away with constant fastening. Each operation of shoeing tends to split the horn.

This horse of defendant's had a brittle foot?—Yes, but I did not consider it weak. It had fair heels.

There are many cases amongst London horses where the maximum of weakness has been obtained and they cannot be shod at all?—Yes.

And they have to be turned out to grass?—That is so.

What did this horse die of?—This foot became bad again. I don't suggest that it had anything to do with the old injury.

But what was the actual cause of death?—The pole-axe.

But why was the pole-axe necessary?—The foot was becoming sloughy.

Now, sir, was this foot not in such a weak and unhealthy condition that it could not be shod without risk before November 20?—I say that the nail was the primary cause of the foot festering.

There is a detachment here. Might not a nail penetrate into this hollow?—It might.

Is it not a fact that the dirt got into this?—It may have been a fresh accident.

The Judge: When you gave permission for it to be re-shod did you consider it fit to work again?—Yes.

Mr. Barrett: When it was in such a weak condition the dirt got in and the foot got shelly?—No, it was not. I don't know what caused the foot to go wrong afterwards.

Would you have expected this result if a horse had a sound foot?—I cannot tell you the cause of the foot going off.

Is it not a fact that the foot went wrong because it was brittle and could not support the weight of the horse?—I cannot say.

The foot of the horse was in a much more weak condition than this one (produced)?—Speaking generally, it was brittle, but not so weak as this one.

Do you think a foot of this kind could be shod without risk?—It would require careful shoeing.

But would you blame a farrier of yours if anything happened?—No; I should tell him to be careful, and I should expect him to be.

The Judge: But if a horse is pricked by a nail would it not become sensitive and flinch?—Yes.

In this case the horse was taken out and did a considerable amount of work afterwards. Is it possible, having regard to the shelly nature of its foot, that the nail worked into the quick?—It might have happened through the shoe being pressed upon sideways.

Mr. Gutteridge: This is my case, your Honour.

The Judge: Then where is the negligence?

Mr. Gutteridge: Although it is not possible for me to show that this was the foot of an ordinarily healthy horse, yet it becomes incumbent upon the farrier who undertakes to shoe a horse of this kind to use a high degree of care.

The Judge: And you must show that he did not. But you have not shown it. It is quite possible that he did not prick the horse.

It is quite possible that the nail did not reach the quick whilst the horse was being shod, but after working it during the day on a foot of this kind it is possible that it may have forced the foot on to the nail.

Mr. Gutteridge: Mr. Shaw has stated that in his opinion it was caused by the prick of the nail.

The Judge: Very likely, but not through careless shoeing. The shoeing may have been perfect so far as the mere act of shoeing is concerned, but where a horse is afterwards exercised and a nail becomes prominent owing to the condition of the foot, it does not show any negligence on the part of the smith in shoeing it. If it had happened at the time through the smith not taking proper care, the horse would have flinched. The fact that he did not shows to my mind that this crumbly, shelly foot was really the cause of the accident.

Mr. Gutteridge: I must show there was careless work on the part of the workman.

The Judge: But your own witness, Mr. Shaw, says it does not show careless work.

Mr. Gutteridge: But that is not fatal to me.

The Judge: I almost think it is fatal to your case, but I hope it is not fatal to you.

Mr. Gutteridge: There is the carman who says that when he took the horse out immediately afterwards it fell lame. It had been shod dozens and dozens of times before, but had not fallen lame immediately after shoeing.

The Judge: It would get worse after each shoeing. As I said just now, if this nail had pressed into its foot at the time it would have flinched.

Mr. Gutteridge: The inference to be drawn—

The Judge: I will not draw inferences. You have no case whatever. Judgment for plaintiff on the claim and counterclaim.

Mr. Barrett: I have three veterinary experts in court whom I was going to call, I ask that their qualifying fees might be allowed?

The Judge: Who are they?

Mr. Barrett: They are Mr. William Hunting, Mr. Hobday, and Mr. Spooner.

The Judge: Very well, I allow their fees.

Reviews.

General Surgery. By Dr. Eugen Fröhner, Professor at the Royal Veterinary College in Berlin. Authorised translation from the Third Revised Edition. By D. Hammond Udall, B.S.A., D.V.M. Associate Professor of Surgery and Obstetrics, Ohio State University, Columbus. Published by Messrs. Taylor and Carpenter, Ithaca, New York. Price 3 dols. net, 347 pages, no illustrations.

As the name of this work indicates, it is a *general* surgery, and not in any way an operative surgery, the latter branch being reserved for

succeeding volumes. It is really doubtful whether more works on the subject are necessary, but on reading through this volume we have been forced to the conviction that there is plenty of room for it, and that while it does not replace other standard works it is a great acquisition to the literature dealing with general surgery. The general system adopted by the author commends itself to the reader, commencing as he does with the common superficial conditions, as wounds and their classification and treatment, and gradually leading up by easy stages and a natural sequence to tumours, the deeper seated diseases of bones, tendons, muscles and vessels. The book does not include surgery of the internal organs.

The work reflects the greatest credit on the author and deserves to be read carefully by practitioner and student alike. It includes much that is only indifferently treated of by other works with which we are acquainted. The chapters on fractures, tumours, tendon sheaths, and bursæ and fasciæ, surpass anything which we have previously seen. Again, statistics, which are both interesting and instructive, are given in such cases as the relative frequency of the various fractures or luxations, &c. Some conditions are discussed from a forensic standpoint, such as culpability in spinal fractures due to casting.

One special point which appears debatable to us occurs in the chapter on papilloma, viz., "canker of the hoof (canker of the frog) is a papillomatous neoplasm; it is characterised by pronounced proliferation of the papillary body and rete mucosum." This is not a suitable place to discuss the matter, but we are certainly not convinced that canker is a neoplasm.

Gangrene and necrosis are given as synonyms, whereas in this country, at any rate, the term necrosis is usually applied to the death of tissue still attached to the body, while the term gangrene is usually applied to "necrosis plus decomposition." In referring to "infectious inflammations," a list of casaul organisms is given, including actinomyces. The author then says: "None of these organisms are mechanical irritants; inflammation is due to their chemical products of metabolism (toxins)." Now, on the contrary, we maintain that the actinomyces fungus is a mechanical irritant, and that its effects are solely mechanical and not due to toxins.

On page 44 we read, "Strangles in the horse is a specific type of pyemia." In our opinion *simple* strangles is *not* a pyæmia, inasmuch as the organisms are not commonly carried by the blood stream, although we admit that pyæmia may result from strangles. Nor do we agree with the author when he includes toxæmia as a septicæmia, which latter term we reserve for bacterial infection of the blood stream. On page 47 we read, "the theory has been advanced that erysipelas is not a specific wound infection disease, but a *localised form of septicæmia in the skin*." We cannot conceive any *localised form of septicæmia*. From its very name septicæmia indicates a generalised condition.

In the otherwise excellent chapter on Fractures, there is one important omission, namely, the special symptoms following fracture of the first rib; and although reference is made in the chapter on nerves to radial paralysis, there is no mention made of the fact that in horses fracture of the first rib is the commonest cause of the condition.

We regret that we cannot accord the same praise to the translator, although he deserves our thanks for giving us so useful a book so lucidly translated. Our chief fault with him lies in the obvious carelessness of proof-reading. To the translator of such a work one is naturally inclined to be indulgent, but mis-spelt words became so numerous that our indulgence became exhausted. We do not refer to obvious "Americanisms," but even in those we would like at least consistence, and do not like to see dyspnea (p. 51) and dyspnœa (p. 52), or septicæmia (p. 5, &c.) and septicemia (p. 40, &c., &c.) We append a list of some of the errors: *a* mixed thromb*i* (p. 13), *spe*ticæmia (p. 41), puerper*per*al (p. 44), pyo-*c*epticemia (p. 45), *of* (for *or*, p. 77), plebit*it*is (phlebitis, p. 90), sarc*y*mata (p. 104), econ*i*mic (p. 106), inoc*c*ulation (p. 106), ab*b*atior (pp. 136 and 172), his (this, p. 137), actinomyco*y*a (p. 160), diapyses (p. 230), inflamm*m*atory (p. 237), &c. We think also that it would have been better to have used the name stifle joint for knee joint. In reference to gonitis we read: "It usually attacks the medial portion of the knee-joint, and in most cases has its origin in the bones (tibia and femur)." To the average student the term "knee-joint" would mean the carpal joint, which is obviously not intended, although we admit that anatomically the translator is correct.

However, in spite of the literary mistakes we repeat what we have already said, that the treatise is really excellent and contains much information that cannot be found in other text-books dealing with general surgery; and that it will amply repay careful study by both student and practitioner.

The printing is good and one soon gets accustomed to the spacing for emphasis. The binding is fair.

G. H. W.

THE THOROUGHBRED HORSE. By MM. P. Fournier and E. Curot. One volume, 763 pages, 26 illustrations. Published by Messrs. Lucien, Laveur, Paris, 1906.

M. Fournier is the well-known writer on equine matters in France under the *nom de plume* of "Ormonde," and M. Curot, a *confrère*, is an authority on veterinary hygiene, particularly as regards feeding.

The book is not designed purely for the use of breeders, but for all who take any interest in the thoroughbred horse.

The first part deals with hygiene and the natural laws of breeding, the history of the thoroughbred and his distribution, laws of heredity, and crosses.

The second part deals with practical breeding. The location of studs, choice of parents, fecundity, sterility, determination of sex, gestation, parturition and abortion, ending with some sound observations on foals and yearlings.

In the third part advice is given about training, racecourses and stables. Great stress is laid on over-work and fatigue.

There is a most interesting chapter on "Dopeing," electricity, massage and aero- and hydro-therapeutics.

M. Curot contributes the portion on feeding.

The book is well illustrated and fills up a gap in equine literature, and will be of value not only to breeders, trainers and horse men, bu also to veterinary surgeons.

Translations and Extracts.

AMPUTATION OF THE FORE LIMB OF A HORSE.

BY PROFESSOR ODRISKI, BUCHAREST VETERINARY SCHOOL.

It is generally supposed that the amputation of the limbs of the larger animals is useless for practical purposes, and it may be observed that when it is necessary the injury is so serious that it is better to destroy the animal.

The case in question appears to be unique, and the operation was only performed by the request of those who valued the patient as a pet.

The animal was an entire black Russian trotter, one of a pair, aged 14, that had been in the owner's possession for a number of years, when he threw out a low ring bone and went lame. The author was consulted, and the part was twice blistered, and subsequently pyro-punctured without any good result. Three weeks after the cautery the high operation of neurectomy was performed, the result of which was successful, the horse going sound and doing his regular work for three months.

At the end of this period the author was again called in. He found the whole region of the coronet swollen, cold, painless, with the hair standing on end, and exuding a yellow-coloured serum that had an extremely fœtid smell. The case was at once diagnosed as being one of gangrene. During the next few days the condition grew rapidly worse, and the owner was informed that the only way to save the life of the patient was amputation of the part. The horse being a great pet, and expense no object, this was agreed to.

The author chose an elastic ligature in preference to the knife, and used a piece of elastic tubing, 60 centimetres long by 8 millimetres thick. With a thermo-cautery he divided the skin just below the fetlock joint, and then wound the tube tightly round it in the groove made by the iron. He states that he used this method of amputation, or rather disarticulation, as the horse having been unnerved did not suffer pain, and it avoided throwing. The foot and fetlock were detached on the seventh day. The ligature became loose on the fourth day and had to be tightened. The resulting wound was clean, regular, and healthy-looking; it was dressed in the usual manner, and a leather boot was made to receive the stump, which was surrounded with a bandage and protective pad.

This did fairly well, but some months afterwards the wound had not healed, which was accounted for by the weight of the body pressing on the end of the bone and the surface of the boot, and preventing cicatrisation.

It therefore became necessary to devise an apparatus that would support the limb and take the weight of the body off the end of the stump. A number of devices were tried before a satisfactory apparatus was obtained.

The apparatus was composed of certain parts made out of steel, a boot of leather, a wooden block, an india-rubber cup, and a strap. The total height of the apparatus was 14 inches.

Inside the leather boot a movable, cone-shaped wooden block

was fitted, about 20 inches in circumference by 2 inches high. It was slightly concave at the base, to receive the stump. It reached from the bottom of the boot to about half-way up. The insides of the leather flaps were padded and lined with soft wash-leather.

The stump was carefully padded and bandaged and placed in the boot, the flaps being adjusted and drawn tight by the strap.

The horse seemed to regard the boot with interest, and moved the limb, but with a little encouragement he placed his entire weight upon it, and finally, after gaining confidence, walked round his box, which he seemed to find pleasure in doing.

The condition rapidly improved, the bedsores, which had given great trouble and anxiety, rapidly healing up, so that after two months there was no trace left; the muscles of the limb, which had atrophied gradually, recovering their tone, so that little difference could be seen between the two sides of the body.

The present apparatus has been in use for seven months, and has become worn out, and the author has ordered a new one, 2 inches higher, as he thinks it will fit better, and being firmer will give a better support.

The author points out that although the boot will not last for ever, the cost of replacing it is not very great, and in a valuable breeding animal it would be amply repaid. He trusts that in the future greater efforts will be made to save brood stock, which he thinks are far too often needlessly destroyed.

(*Archiva Veterinaria Bucharest.*)

INTESTINAL OBSTRUCTION BY A CORK IN A DOG. LAPAROTOMY; RECOVERY; SUBSEQUENT DEATH.

BY M. DUPAS.

The animal had been ill for a fortnight, with loss of appetite, vomiting, the buccal membrane injected, back arched, abdomen retracted and painful, and the bowels not acting. On examination, a hard cylindrical mass was detected in the intestine, and an operation was decided upon.

The anæsthetic used was chloroform and atropine and morphia, the skin being disinfected in the usual manner. An incision 8 centimetres long was made over the foreign body, and by pressing on the abdomen the loop of intestine containing the cork was extruded. The bowel was congested, thickened, and greatly distended, the wall being greatly infiltrated. A longitudinal incision 3 centimetres in extent was made, and the cork of a wine bottle extracted. The lining membrane of the intestine was much inflamed and in parts desquamating. The part was well irrigated with carbolic solution and the wound closed with catgut Lembert's sutures. The operation wound was closed with two layers of sutures—deep and cutaneous. A compress, dampened with carbolic solution, and kept in place by a broad bandage over the back, completed the dressing. The diet consisted of Vichy water with sugar dissolved in it.

On the tenth day pus was found to have formed between the two

layers of abdominal sutures, and purulent urethritis and diarrhœa had set in, although the general condition remained good.

The animal, however, died suddenly on the twenty-fifth day after the operation. On examination there was found to be acute purulent peritonitis, but the intestinal and abdominal wounds had healed up perfectly.

(*Recueil de Médecine Vétérinaire.*)

ECHINOCOCCI IN THE LUNGS AND HEART IN A COW.

BY M. BERGEON.

THE author was called to a cow that for some time had been coughing and had fed badly.

The skin was in good order and the coat bright and clean, but if made to move a severe cough with heaving of the flank and difficulty in breathing was provoked. When still there was a venous pulse and congestion of the jugular vein, which was accentuated when made to move. The pulse was intermittent and the action of the heart fluttering. On auscultation the heart sounds were weak, but without any whistling. The tuberculin test was applied with negative result.

The animal was slaughtered, and when the carcase was prepared a large number of hydatids were found in the liver and lungs. The most important lesion was at the right auricle, where there was a large cyst pressing on the anterior vena cava: this explained the jugular congestion and the symptoms of traumatic pericarditis.

(*Revue Vétérinaire.*)

SARCOMA OF THE RIGHT OLFACTORY LOBE IN A DOG.

BY MM. MARCHAND, PETIT, AND COQUOT.

THE patient, a mongrel, aged 12, came under the authors' notice. He seemed stupid, took no notice of surrounding objects, had difficulty in walking, that much resembled the movements in a "shivering" horse, and sensation was diminished. The right eye was deeply retracted into the socket and squinted upwards and inwards. There were two ulcerated tumours on the neck and sheath. The symptoms all pointed to the presence of a tumour in the right frontal lobe.

The animal was destroyed, and an examination made directly after showed that the right olfactory lobe was deformed and much enlarged, being invaded by a tumour that was intimately connected with the ethmoid bone, measuring 5 centimetres in length. Microscopic examination showed that it and the external tumours were round cell sarcomata, and that in consequence of the pressure there was atrophy of the pyramidal cells and diminution of the myelin fibres.

The authors point out that the state of stupor, loss of sensation, and the epileptic attacks, due to the extensive cerebral alterations, afforded no evidence as to the seat of the lesion, but that the locomotory troubles did. The identity of the structure of the tumours leads them to think that the cerebral growth was secondary to the external ones.

(*Recueil de Médecine Vétérinaire.*)

CASE OF POISONING IN THE HORSE BY BICHROMATE OF POTASH.

BY MM. DESOUBRY (VERSAILLES) AND SIMONNET (SAINT GERMAIN).

THE authors were called about 6 p.m. on May 26, 1905, to attend an eight-year-old gelding for an attack of colic. The usual treatment was adopted, and about 1 a.m. the animal was out of danger and on the road to recovery. The next day he was ordered 20 grammes each of sulphate and bicarbonate of soda in gruel. A prescription was given to the owner, but as he had none of the bicarbonate he sent to a chemist he was in the habit of dealing with, whose assistant, by some extraordinary mistake, substituted bichromate of potash for bicarbonate of soda.

The first dose was given on the morning of May 27. At mid-day he seemed dull and only ate half his food, in the evening he refused it altogether.

On the morning of the 28th he was in the same state and stiff all over. The authors were again called in. A careful examination gave no indication as to the cause; there was marked laminitis, but the temperature, pulse and respirations were normal. At 2 p.m. the stiffness had increased, the pulse was 72 beats per minute, the heart beats weak, quick and irregular, temperature 38·7° C., but the respiration normal. The mucous membranes were blue, and there was great pain on pressure over the abdomen. The fæces expelled were small in quantity and the pellets covered with mucus. There was an unquenchable thirst which persisted up to the last.

Treatment consisted of milk *ad lib.*, mustard to the abdomen, and warm enemata with sulphate of soda.

At 4 p.m. the respirations became short and sharp, the temperature 39·3° C., and pulse 60 beats per minute, the stiffness being less marked. It was only then that the mistake was discovered, the groom producing the remainder of the supposed packet of bicarbonate of soda.

The patient was now in a very grave condition, the thirst increasing. He was given milk and white of egg *ad lib.*, and 350 grammes of Jeannel's antidote, viz., solution of ferric sulphate (D. 1.45) 100 grammes, added at the moment when used to calcined magnesia 80 grammes, animal charcoal 40 grammes, water 800 grammes. Dose: horse and ox, 100 to 500 grammes; dog, 50 to 100 grammes.

Treatment, however, was useless, violent colic supervened, and the animal died at 1 a.m., or about forty hours after taking the first dose of 20 grammes of the bichromate of potash.

A *post-mortem* examination was made at noon on the 29th. The connective tissue was studded over with a number of small hæmorrhagic points. The mucous membrane of the mouth and lips was covered with a number of small shallow ulcers, the result of the caustic action of the bichromate of potash in the food. The membrane of the stomach showed a large number of black patches, but no ulceration or perforation: the peritoneum was normal.

The lining membrane of the small intestine, for its entire length, was covered with a thick blood-stained layer, and it and the large ones were filled with a blood-stained fluid. The most striking feature, however, was the complete absence of the lining mucous coat, the structure of the bowel being reduced to the muscular layer, although

there was complete absence of perforation. The lungs, heart, kidneys, bladder and spleen showed no particular lesion. A curious fact was that although the intestinal fluid was most carefully collected and tested, not a trace of the poison could be detected.

The case appears to be an uncommon one, and the main points are that on the morning of May 27 the horse took 20 grammes of the poison in his food and about a further quantity of 10 grammes at mid-day. The first symptoms of illness appeared on the morning of the 28th, at the time the drug had been either eliminated or was in process of elimination, and had given rise to the lesions that ultimately caused death. There was no doubt as to the cause of death, although the poison could not be detected.

(*Recueil de Médecine Vétérinaire.*)

POISONOUS BEANS.

BY M. DARRAS.

THE poisonous nature of certain foreign beans was first brought to notice by M. Guignard, and since then numerous accidents have been reported from their cause. M. Darras has published a paper which was read before the Central Veterinary Medical Society of Paris, on May 17, on the toxic properties of what are known as Birmanie beans.

These beans are commonly fed to horses, crushed and mixed with other grains, in the proportion of 500 grammes to 15 litres. Their use often puts animals off their feed, as is so frequently the case when a new food is given. The author has also seen attacks of colic. In one case death took place in less than three hours. The symptoms were, sudden and great prostration, quick and almost imperceptible pulse, panting, respiration, violent muscular tremors, and profuse perspiration.

On *post-mortem* examination the lesions noticed were great congestion of the large intestine, the abdominal organs were blanched, the muscles altered, friable, discoloured, and covered with numerous hæmorrhagic patches, the whole of the appearances being those of rapid and violent intoxication.

M. Darras directed these beans to be discontinued in the stud in question, but unfortunately a certain quantity of grain, estimated at 30 kilogrammes of beans to 2,000 of grain, was issued by accident to two depôts. In both the horses were seized with colic and loss of appetite, whereas in the other stables where the beans had not been used the horses retained their usual state of health. One horse died with the same symptoms as those before described.

M. Guignard has demonstrated the presence of hydrocyanic acid in the *Feolus lunatus*, but according to his analysis the quantity varies very greatly, viz.:—

	Hydrocyanic acid per 100 grammes.
Java beans	... 0·102 to 0·052 gramme.
Birmanie beans	... 0·015 to 0·006 ,,
Madagascar beans, coloured	... ... 0·027 ,,
,, ,, white	... ... 0·008 ,,
Tunis beans	... 0·008 to 0·004 ,,

The poisonous dose for an adult of pure acid is 0·06 to 0·07 gramme, and for a horse 6 to 10 drops; in other words, from 25 to 50 centigrammes, or an average of about 40.

The exact quantity of beans used having been given, the quantity of hydrocyanic acid taken by each horse would be 0·015 to 0·075, which would not be a poisonous dose; but in all probability the mixture was not perfect, and some horses got more beans than others.

Birmanie beans are the least dangerous of any that contain hydrocyanic acid, and in several studs they are regularly used without any danger.

(*Recueil de Médecine Vétérinaire.*)

Books and Periodicals, &c., Received.

Veterinary News; Revue Vétérinaire; Recueil de Médecine Vétérinaire; Bulletin Vétérinaire; Board of Agriculture Returns; Report of the Department of Agriculture (Ireland); American Veterinary Review; Ceylon Agricultural Journal; Journal of the Royal Army Medical Corps; Surgical Anatomy of the Horse (Share Jones); Tuberculosis, its Origin and Extinction (Pickett Turner); Annual Report of the Indian Civil Veterinary Department; The Psychology and Training of the Horse (Cesaresco); Rhodesian Journal; The Creamery Journal; The Thoroughbred Horse (Fournier and Curot); General Surgery (Fröhner, translated by Udall).

Letters and Communications, &c.

Mr. Clement Elphick; Prof. Bradley; Capt. Baldrey; Prof. Liautard; M. Broda; Signor Cinotti; Major Rose; Capt. A. J. Williams; Colonel Nunn; Prof. W. L. Williams; M. Bergeron; Mr. A. E. Payne; Prof. Henry Taylor; Mr. Jas. McKenny; Capt. Sullivan; Mr. R. Macgregor; Mr. W. Hunting; The Editor of the Motor Car Journal.

NOTE.—All communications should be addressed to 8, Henrietta Street, Covent Garden, London, W.C. Telephone, 4646 Gerrard. Telegrams, "Baillière, London."

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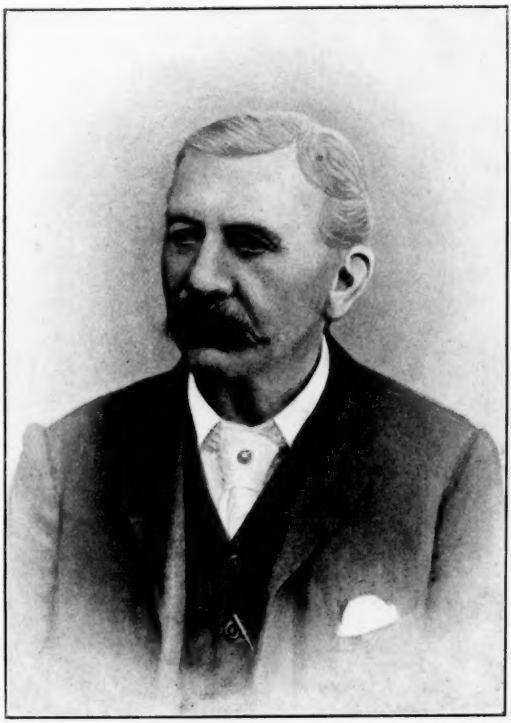

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THE LATE PROFESSOR PRITCHARD, M.R.C.V.S., F.C.S.